
TERMINAL No. 4 10–11,280'
SOLITUDE BOWLS
PYRAMID PEAK
1,720'
TERMINAL No. 2 10,500'
SHERWIN BOWL
TERMINAL No. 3–10,200'
10
8
3b
9
SOLITUDE CANYON
9,080'
1
7
5
6
3a
2
4
MOTO-X
7,950'
SNOWCREEK BASE
7,880'
TOWN OF MAMMOTH LAKES
7,860'
PROPOSED
SHERWIN SKI AREA
FEASIBILITY STUDY
HWY. 203

PROPOSED
SHERWIN
SKI AREA
FEASIBILITY STUDY

USDA FOREST SERVICE
in cooperation with
ALLAN O'CONNOR & TOM DEMPSEY

PREPARED BY: Allan O'Connor — May 8, 86
O'Connor Design Group

REVIEWED BY: Robert B. Wood — May 9 86
Robert B. Wood
Winter Sports Specialist, Mammoth Ranger District

Dean J. McAlister — May 8, '86
Dean J. McAlister
District Ranger, Mammoth Ranger District

John W. Ruopp — MAY 8,86
John W. Ruopp
Recreation Staff Officer, Inyo National Forest

ACCEPTED BY: for — MAY 8 86
Leon R. Silberberger
Acting Forest Supervisor

MAY 1986

CONTENTS

MAPS

1 SUMMARY

This feasibility study documents a comprehensive analysis of the environmental, social and economic factors surrounding the development of the proposed Sherwin Ski Area, located in the Town of Mammoth Lakes, California. The site is within the Mammoth Ranger District of the Inyo National Forest.

Studies have been conducted to determine the capability of the potential Sherwin Ski Area site to provide alpine skiing to the general public. The studies are presented in this report.

The Sherwin Ski Area Feasibility Study evaluates alternative ski area developments ranging from 4,000 SAOT (skiers at one time) to 12,000 SAOT, with 2 potential base areas considered at each level. As proposed, winter activities under all alternatives would include alpine and telemark skiing. During the summer, gondola rides could be offered. Under one alternative, the base facilities would also be used in the off-season as a center for conferences and festivals.

Issues and concerns considered were derived from past and on-going studies conducted by the Inyo National Forest, Mono County, and the local community. These subject areas of interest were identified:

—Visual Quality
—Recreation
—Transportation
—Air Quality and Noise
—Water Quality and Quantity
—Wildlife
—Vegetation
—Climate/Snow
—Project Economics
—Social and Economic Effects on the Local Community
—Cultural Resources

The major areas of controversy related to the proposed project include:

—Demand for increased alpine skiing capacity in Mammoth Lakes
—Potential impacts on the Sherwin Deer Herd
—Capability of the Mammoth County Water District to provide for increased water demand
—Capability of the Town of Mammoth Lakes and US Highway 395 to absorb increased traffic levels
—Project economics

The studies indicate that the Sherwin site could accommodate a maximum of 12,000 SAOT. These indications include:

1 Extensive areas of high-quality advanced and intermediate terrain, which could provide an important national recreation resource

2 Evidence of increasing skier demand

3 With the exception of proven water resources, the existence of or potential for sufficient natural and manmade resources to facilitate successful development and operation of the ski area in the foreseeable future

4 The entire ski area, including base support facilities, could be located on National Forest system lands

5 An elevation range of 7,960' to 11,728' (3,768' feet of vertical)

6 An expected average season of 175 days

7 Good snow conditions

8 Mild, sunny climate

9 A potential terrain mix of 18% beginner, 41% intermediate, and 41% advanced, which when combined with Mammoth Mountain and June Mountain would provide a regional terrain mix of 13% beginner, 54% intermediate and 33% advanced, making the region competitive nationwide

10 A potential average run length of one mile, with some runs continuing for up to two and a half miles

11 At least 728 skiable acres are available

12 Advantageous transportation opportunities to the site from the community

13 Feasibility of emplacement of roads for construction and service

14 Advantageous location for providing utilities.

Mitigation plans to reduce the following disadvantages to acceptable levels would need to be prepared prior to development:

1 Deer herd staging areas and migration routes are located within the site

2 A large portion of the site is subject to avalanche hazards

3 Most of the area would be subject to closure during adverse weather and avalanche conditions

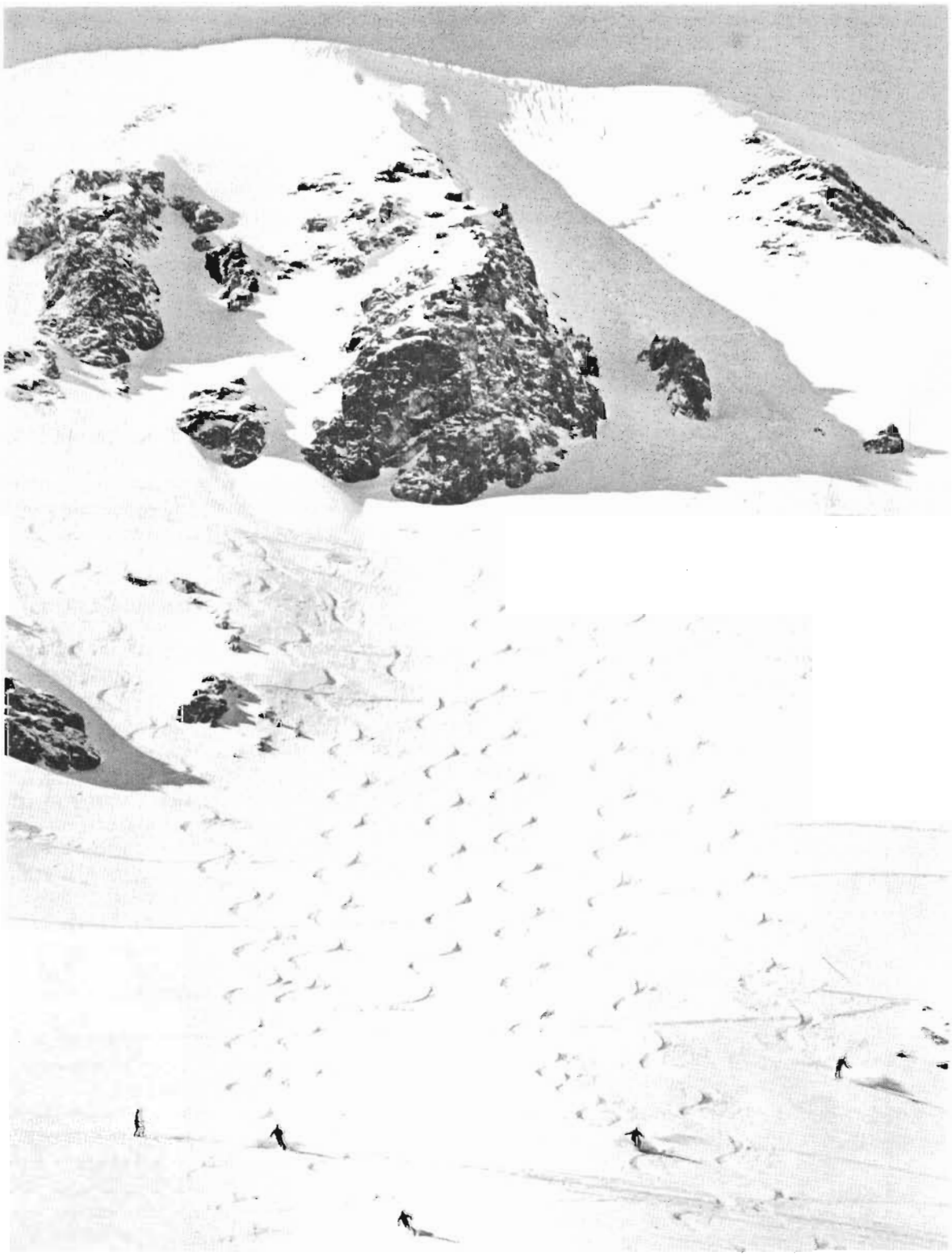
4 Difficult terrain modifications would be necessary in Solitude Canyon and moraine, rock and glacier areas

5 The Town of Mammoth Lakes has reached its current water supply limits

6 Traffic conditions, with accompanying noise and air pollution, should not be further degraded within the Town of Mammoth Lakes.

CONCLUSION

The USDA Forest Service should prepare an Environmental Impact Statement to determine the environmental effects of developing a new ski area at the Sherwin site.



1 PURPOSE AND NEED

PURPOSE

In 1982, a proponent, Allan O'Connor, requested a special use permit to develop an alpine ski area at Sherwin Bowl, which had been previously designated by the Inyo National Forest and Mono Couny as a potential ski area site.

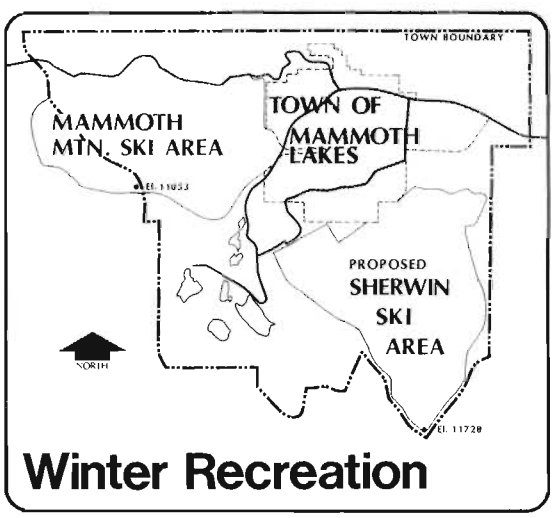
The development proposal was a response to substantial evidence indicating that the demand for skiing in the Mammoth area will, in the near future, increase beyond capacities allocated by approved planning documents (refer to the economic and market studies beginning on page 127). Also, the draft Town of Mammoth Lakes General Plan has been developed to accomodate ski area development at Sherwin Bowl for 8,000 SAOT.

At that time, the Mammoth District Ranger issued the proponent an annual permit to conduct a feasiblity study of the site, which was renewed each subsequent year. The purpose of the feasibility study was to determine the physical, environmental, and economic capability of the site to provide alpine skiing opportunities to the general public.

On July 2, 1985, the Forest Supervisor and the proponents, Allan O'Connor and Tom Dempsey, entered into a cooperative agreement to complete this study, with all preparation costs to be borne by the proponents. A feasiblity study outline was adopted by the Inyo National Forest (INF) to provide guidelines for development of this report. Studies were conducted and reports prepared by the proponents, consultants, and Forest personnel. The INF formed an interdisciplinary team (IDT), composed of Forest personnel, to work with the preparers to create a document that was acceptable to the Forest.

The feasibility study report and cooperative agreement in no way obligate the Inyo National Forest to issue the proponents, or any other party, a special use permit to develop an alpine ski area at the site. The decision whether to issue a permit will be based on information provided by a site-specific Environmental Impact Statement.

As a result of this study, the proponents have requested that the Forest Supervisor continue the process of acting on the 1982 Special Use Permit by preparing an Environmental Impact Statement to evaluate the environmental, social and economic factors in developing a ski area at the Sherwin site.



THE SETTING

The Town of Mammoth Lakes is located on the eastern slope of California's Sierra Nevada mountains, a few miles west of US Highway 395 about 300 miles north of Los Angeles. Founded as a Gold Rush community in the 1870's, the town has been a center for recreation and tourism since the 1920's.

Though the region achieved its first fame as a summer resort, it became a year-round, four-season tourist destination with the installation of the first rope tow on Mammoth Mountain in 1941. Since that time, Mammoth Mountain Ski Area has become the largest private industry in the eastern Sierra, accommodating 19,000 skiers at one time (SAOT), and more skiers per year than any other single ski area in the nation. The community and the USFS have recognized the region's potential to help meet the increasing public demand for California alpine skiing facilities well into the next century.

Mammoth's popularity with Southern California skiers prompted the USFS to begin exploring possible expansion plans in the early 1960's. In 1964, the USFS designated the Sherwin Bowl area as a winter recreation site, and began studying it as a location for a second

Proposed

Sherwin Ski Area

Prepared by:

O'Connor Design Group, Inc.

and **Sno-Tek**

Architects, Engineers & Planners

NORTH

Scale: 1" = 4 Miles

REGIONAL MAP

ski area. Since then, 39 studies have been conducted to assess the feasibility of developing ski trails at Sherwin (see Appendix A).

The Sherwin site is located inside the southeast boundary of the Town of Mammoth Lakes, on the north-facing slope of Sherwin Mountain in sections 10-15, 23 and 24 of T.4S, R27E, in the Mammoth Ranger District, Inyo National Forest. The site is bounded on the southwest by the crest of a ridge that includes Pyramid Peak, Red Mountain, and Fingers Peak; on the east by the Sherwin Creek drainage; and on the north by the USFS Mammoth meadow area and Dempsey Construction Corporation's Snowcreek land development. The area comprises about 3,300 acres of steep, mountainous terrain varying in elevation from 7,960' to 11,728'.

The study area is in a somewhat protected geographic location relative to the Mammoth Pass stormcourse, and receives approximately 22% less snowfall than Mammoth Mountain Ski Area. This is anticipated to produce a 175-day average ski season—shorter than Mammoth's 225-day season, but longer than Aspen, CO's 150-day season. The site enjoys the same high-quality packed powder and mild, sunny climate that MMSA does.

The proposed Sherwin site is timbered with whitebark pine and an assortment of other conifers, with occasional stands of aspen and willow. There is no commercial logging in the area.

A large herd of Rocky Mountain mule deer migrates through the area during spring and fall. A two-year study (Kucera, 1985), prepared with the cooperation of the California Department of Fish and Game, tracked the migration patterns of this herd; an additional study (Glover, 1986) suggests possible mitgation measures. Results of these studies are included in this document.

Current recreational uses in and around Sherwin include hiking, motocross, ski touring, snowmobiling, heli-skiing and hunting. For further discussion of these uses, refer to the Land Use chapter on page 69.

Tourism is the economic mainstay of the Mammoth Lakes region. Proximity to two USFS wilderness areas and numerous Sierra lakes draw hikers, campers, hunters and fishermen in the summer and fall months, but most of the area's revenue arrives with the snow and skiers between November and May. According to the town's General Plan, the community views Sherwin Ski Area as a major step toward attaining destination resort status.

A national economic downturn and widely publicized seismic activity created an adverse economic climate, resulting in a major recession in Mammoth Lakes beginning in 1980. School enrollment dropped 26% for the first time in the district's history, and real estate values fell 35 to 50% depending on the property type. Due to high unemployment levels, the State of California designated Mono County as a redevelopment area in 1984.

Historically, winter resorts that evolved from one-mountain weekend resorts to all-week resorts with multiple ski areas have been able to attract high-quality air service and superior hotels, which in turn attract year-round visitors. The economic benefits of a new ski area could also reach the nearby communities of June Lake, which has one 3,100 SAOT ski area; and Bishop, which is a popular rest stop for Southern California visitors and provides overflow lodging for Mammoth Lakes.

As proposed, Sherwin Ski Area would be expensive to develop, but offers these statistics:

—3,400 vertical feet, which would place it eighth among US ski areas in vertical rise.

—An average run length of over one mile, with some runs over two and one half miles.

—World-class racing terrain, which could complement available terrain at Mammoth Mountain to enhance the region's potential as an international competition site.

—The area encompasses about the same amount of terrain as Mammoth Mountain, but would accommodate one-third the number of skiers.

1 SITE DESCRIPTION

Sixteen distinct geographical regions have been identified on the site:

Fingers Peak A rock formation located on the ridge that forms the boundary between the Sherwin site and the Lakes Basin.

Three Fingers A bowl containing three prominent, steep avalanche paths that meet at a large rockfall area called Blocky Canyon. This rockfall ends at the edge of Arcularius Meadow. Three Fingers offers the best expert and advanced skiing in the study area.

North Face The north-facing slopes between Three Fingers and the western boundary of the site. International-quality racing slopes with up to 2,200 feet of vertical rise are situated in moderate to heavily forested terrain, with several large, open avalanche paths.

Mammoth Rock A monolithic rock outcrop located halfway up the North Face, several hundred yards from the area's western boundary. Excellent intermediate and advanced slopes for undeveloped free skiing are located west of the rock amid moderately-spaced conifers. There are avalanche paths in the area.

Sherwin Bowl This large mid-mountain bowl contains both forest and open slopes. It offers primarily intermediate skiing.

Judge's Bench A large, open, flat bench forming the lower terminus of Sherwin Bowl.

Moraines These glacial fingers extend from Blocky Canyon to the Motocross area along the base of the mountain. They contain a variety of geology and vegetation. Although they would be difficult to develop, they provide the only beginners' terrain in the lower elevations of the study area.

Red Peak A small point along the western ridge, southeast of Fingers Peak and directly south of Sherwin Bowl. The peak is rounded and barren, and ideal for locating lodge and lift facilities. Because of the peak's high visibility from both the community and the John Muir Wilderness, facilities here must be camouflaged to blend in with the site's distinctive red rock, and situated where they will not be readily seen.

Horn Ridge A massive ridge that rises from the Motocross area to meet Sherwin Ridge at a right angle, forming the western wall of Solitude Canyon. Steep, rocky faces and visual sensitivity make it unskiable, except for portions at the top near Sherwin Bowl.

Solitude Canyon A large canyon containing a variety of terrain and vegetation descends from the southwest corner of Pyramid Bench and opens into the Motocross. There is no surface water except for spring runoff. Constraints in the canyon include avalanche paths, a large rockfall deposit and a major deer migration corridor. Skiers of all levels could be accommodated on the canyon's various slopes.

Solitude West Bowl A relatively open bowl in the upper reaches of Solitude Canyon offering intermediate and advanced skiing. A deer migration route runs through the bowl and over the saddle at the top. Skier access is from the Red Peak area.

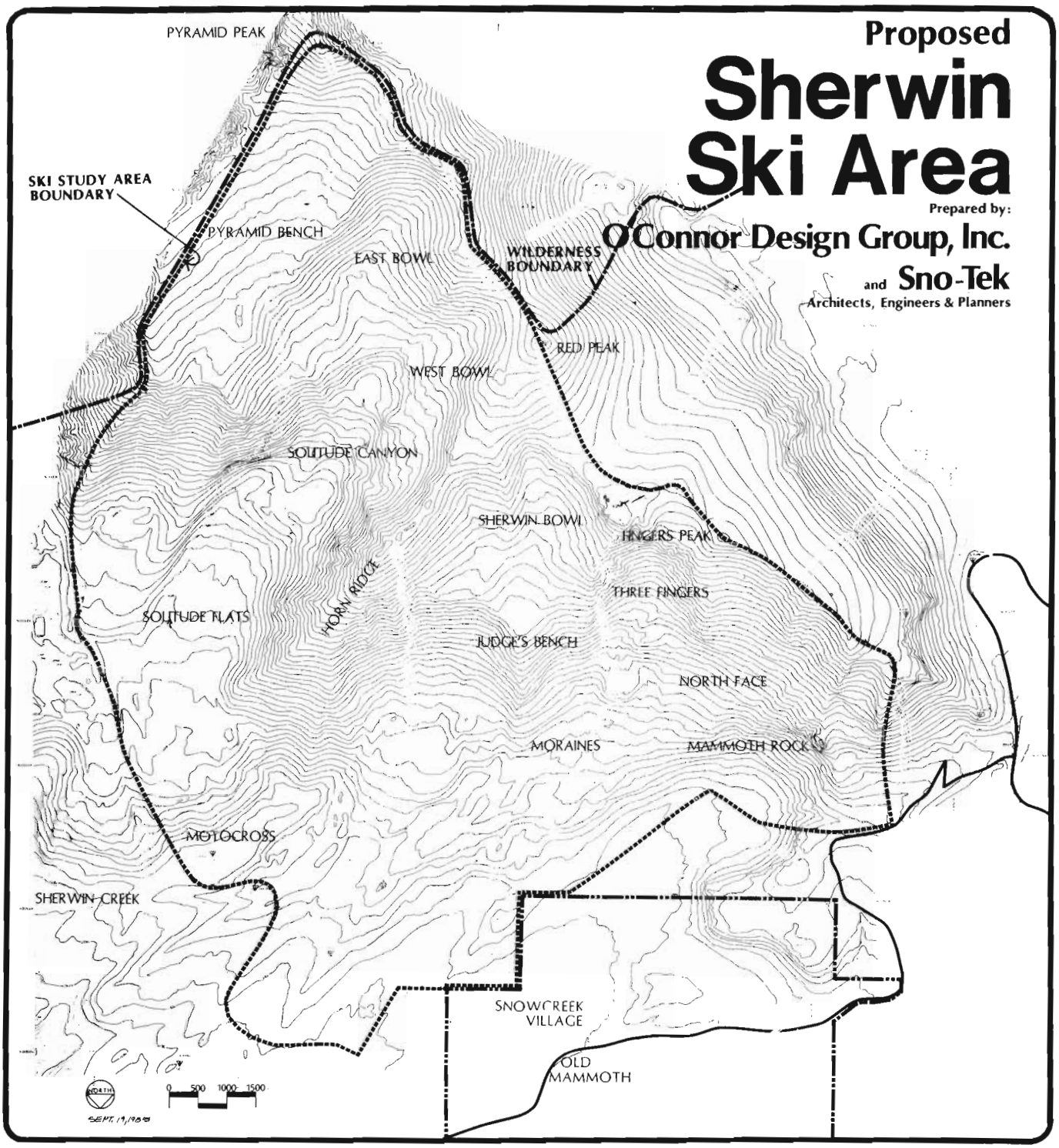
Solitude East Bowl An open, rocky bowl south of West Bowl. It could serve intermediate and advanced skiers, who arrive via Pyramid Peak.

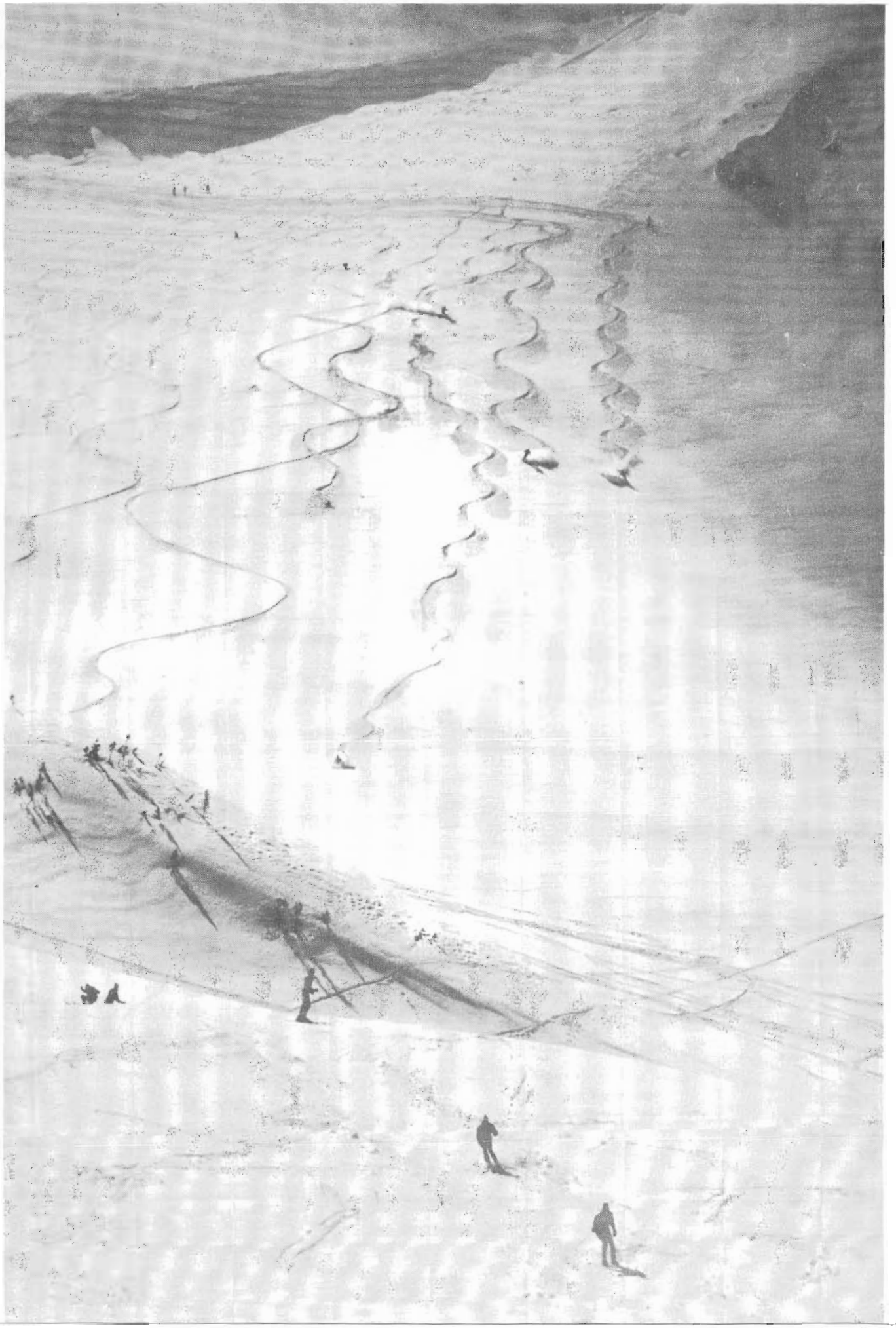
Pyramid Peak This treeless landmark is the highest point on the site (11,728') and forms the southernmost ski area boundary. Slopes serving all skier levels can be reached from this peak.

Pyramid Bench An undulating, sparsely-forested flat that descends north from Pyramid Peak. The east edge is a rugged cliff dropping into Laurel Canyon. The bench could provide excellent novice/intermediate skiing, though it would be necessary to prevent skiers from approaching the eastern boundary.

Solitude Flats The lower reaches of Solitude Canyon as it nears the Motocross. There are heavy rockfall areas on each side of the canyon, with numerous small openings and moderate to heavy tree cover. Novice and intermediate skiing terrain predominates, through the lower third is too flat for anything but ski-back trails leading to Motocross.

Motocross An elongated bowl containing an active motocross facility. There is heavy tree cover on the south and southwest slopes, with chaparral on the low moraine slopes to the north.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE CANYON
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SOLITUDE FLATS
JUDGE'S BENCH
NORTH FACE
MORAINES
MAMMOTH ROCK
MOTOCROSS
SHERWIN CREEK
SNOWCREEK VILLAGE
OLD MAMMOTH
NORTH
0 500 1000 1500
SEPT. 19, 1988



ALTERNATIVES 2

The seven alternatives presented in this section were prepared by the proponent in consultation with the Forest Service. They attempt to cover a full range of development possiblities available at the Sherwin site, taking into account the studies conducted as part of this report. Detailed discussions of the studies are presented in the third section of this document.

The issues, concerns and opportunities discussed in the previous section are perceived to be growth-dependent—the greater the growth, the greater the effect. A comprehensive design analysis set the mountain's maximum skier capacity at 12,000 SAOT. The Town of Mammoth Lakes General Plan has recommended 8,000 SAOT as a maximum. Testing alternatives in increments of 4,000 was thus a logical step, and resulted in the following development levels:

Level	Capacity
No Action	0
Minimum	4,000
Moderate	8,000
Maximum	12,000

The site is divided into two distinct areas, which are divided by a large ridge. The geography of the North Face suggests a natural base area near Snowcreek Village; while the Solitude Canyon area indicates a base area near the Motocross. To test the full range of action alternatives, six scenarios were explored:

Base	Level	Capacity
Snowcreek	Minimum	4,000
	Moderate	8,000
	Maximum	12,000
Motocross	Minimum	4,000
	Moderate	8,000
	Maximum	12,000

Analyzing the environmental, economic, and recreational attributes of the above six alternatives resulted in development of a seventh alternative, to be based at Snowcreek and accommodate 8,000 SAOT.

A number of other alternatives were examined and eliminated from further consideration. These include:

Motocross/Snowcreek The development of an alternative using both the Motocross and Snowcreek base sites was not considered economically or environmentally feasible at the present time.

Fingers Base The Fingers site in Arcularius Meadow is environmentally sensitive. Though several of the following alternatives call for satellite facilities in this area, the site cannot sustain a main base lodge facility with parking.

Locations Other Than Sherwin The scope of this feasibility study is limited to the Sherwin site by the Draft Forest Plan and the Mono County General Plan, which proiritize Sherwin Bowl before the Knolls, Minaret Summit, San Joaquin Ridge, and White Wing areas for analysis.

No Action Because the purpose of this feasibility study is to determine the development capabilities of the Sherwin site, this alternative is outside its scope.

2 ABOUT THE ANALYSIS CHARTS

Three charts accompany each of the seven alternatives that are presented on the following pages. The first describes the attributes of each ski lift within the alternative; the second deals with the characteristics of the proposed trails, which are clustered into "pods" (a pod is defined as an area of potentially skiable terrain that generally serves one class of skier and is established by the logical alignment of one or more lifts); and the third summarizes utilization information for each pod. Together, the analysis charts present a wide range of specific design data for each alternative.

LIFTS

NUMBER Lift number

TYPE Type of lift. FG is a fixed grip chair; DET is a detachable chair.

PASS Number of passenger seats per chair

CLASS The level of skiers using this lift.
- B = Beginners
- N = Novice
- N/I = Novice Intermediate
- I = Intermediate
- I/A = Advanced Intermediate
- A = Advanced
- E = Expert

CAP/HR (m) Capacity per hour (in thousands). The number of skiers this lift can transport in one hour. This figure is based on observation of the double lifts at Mammoth Mountain, and on data supplied by several major lift companies.

The net capacities of double, triple and quad lifts are conservatively estimated by multiplying the gross number of skiers per hour (the number of chairs on the lift times the number of passengers per chair) by an efficiency factor that varies according to the class of skier who will be riding that lift. For beginners, this factor is .75; for intermediates, .83; and for advanced skiers, .95. The efficiency factor is designed to take into account the greater frequency of slowdowns and stops on lifts that serve less experienced riders.

S/F Slope Factor. The ratio of skiers on the lift to those on the slopes that are served by that lift. Intermediate areas have a slope factor of 1.0; beginner areas are higher, and advanced areas lower.

CHR SEP Chair separation. The estimated number of feet between each chair on the lift.

HORIZ (m) Horizontal feet (in thousands). The horizontal distance from the top to bottom of the lift.

VERT(m) Vertical feet (in thousands). The difference in elevation between the top and bottom of the lift.

LENGTH Length of lift (in thousands). Actual distance between the top and bottom of the lift, calculated from the HORIZ and VERT figures above.

VTF Vertical Transport Feet (in millions). The maximum total number of vertical feet traveled by all lift passengers in the course of one hour. It is arrived at by multiplying the CAP/HOUR figure by VERT (see above).

DEGREES The lift's average angle of ascent

% SLOPE The average percentage of the lift's slope

DERATE A lift may fulfill two functions: it can serve the adjacent trails, or it might offer transportation to other areas of the mountain. Derate factors are calculated for lifts which serve primarily as transportation giving access to proportionally less ski terrain. The derate is the ratio of the capacity of the adjacent trails to the capacity of the lift.

IN LINE The maximum allowable number of skiers waiting in the lift line at one time, based on a 10-minute wait. The figure is calculated by dividing CAP/HR by one-sixth (10 minutes).

ON LIFT The maximum number of skiers on the lift at one time. The length of the lift is divided by the distance between chairs, and the result is multiplied by the number of seats per chair.

ON RUNS The maximum number of skiers using the runs served by this lift at one time. The number of the skiers on the lift (see ON LIFT) is multiplied by the slope factor (see S/F).

ACTIVE The maximum number of skiers actively engaged in skiing activities at one time. This is the total of the IN LINE, ON LIFT, and ON RUNS figures.

INACTIVE The maximum number of skiers engaged in non-skiing activities (such as eating or resting) at one time. This number is 25% of the ACTIVE number, projecting that 80% of all skiers will be active and 20% inactive at a given time. This estimate varies between 15% and 35% at existing ski areas in the western U.S.

MAX CAP Maximum Capacity. The total of active and inactive skiers. This figure is the contribution that a specific lift makes to the mountain's overall maximum capacity. Adding the MAX CAP numbers for each lift will yield the maximum skier capacity for this alternative (the far right-hand column shows this total figure).

OLF Overlift Factor. The difference between the mountain's maximum capacity under this alternative (see MAX CAP) and the stated capacity (see SAOT below). This margin, which ranges from 9% to 19% in the various alternatives, provides a "buffer zone" that will prevent crowding in the event of lift or trail closures.

SAOT Skiers At One Time. The maximum number of skiers that will be accommodated under this alternative--approximately 80% to 90% of the theoretical maximum capacity for this design.

BEGIN **INT/ADV**
NOVICE **ADVANCED**
NOV/INTER **EXPERT**
INTER

These rows show the number of beginning, novice, novice/intermediate, intermediate, intermediate/advanced, advanced, and expert skiers who will be using the runs served by this lift.

TRAILS

POD DES Pod designation. Refer to the alternative map to see what area is included in a specific pod.

POD ACRES The gross acerage of each pod.

SKIER CLASS The level of skier who will predominately use the trails in this pod.

ASSOC LIFTS Associated lifts. The specific lifts that will give access to this pod. Refer to the alternative map for the designated number of each lift.

PERCENT UTIL The estimated percentage of people on a specific lift that will use the trails within this pod.

ACTIVE SKIERS The maximum number of skiers actively engaged in skiing activities--on the slopes, on the lifts, or in lift lines--attributed to a specific pod.

LIMIT FACTOR SAOT divided by the MAX CAP for each pod yields the limit factor. This is the complement of the overlift factor (see OLF above). The sum of these two numbers for any alternative is 100%.

POD SKIERS The maximum number of skiers that the pod can accommodate at one time. This number represents the pod's contribution to the mountain's overall capacity under this alternative, and is calculated by muliplying the total active skiers by the limit factor.

SKIERS/ACRE Skiers per acre. The estimated number of skiers per developed acre that the terrain can safely hold. Based on experience and observation at other ski areas in the western U.S., the following skier density criteria are used:

Skier Class	Density/Acre
Beginner	20
Novice	20
Novice Intermediate	16
Intermediate	16
Advanced Intermediate	12
Advanced	6
Expert	8

TERRAIN ACRES The amount of groomable trail terrain required in this pod. POD SKIERS is divided by SKIERS/ACRE to get this number.

AV WIDTH OF TRAIL (in feet). The average groomable trail width necessary for safety, as determined by skier class and geographic location.

LENGTH OF TRAIL (in feet). TERRAIN ACRES is multiplied by 43,560 square feet (one acre); the result is then divided by AV WIDTH OF TRAIL to find the total length of trail needed within the pod.

AV LENGTH OF TRAIL (in feet). The measured average length of the trails within the pod.

TOTAL RUNS LENGTH OF TRAIL is divided by the AV LENGTH OF TRAIL to find the approximate number of runs to be placed within the pod.

POD UTIL % TERRAIN ACRES is divided by POD ACRES to determine what percentage of land within the pod is to be developed. Though there is no established rule for how much terrain within a pod should be used, 35% is a generally accepted ski industry maximum.

POD An area of potentially skiable terrain that generally serves one class of skier and is established by the logical alignment of one or more lifts. Refer to the alternative map to find the placement of the pods.

UTILIZATION

LIFTS The lifts that serve a specific pod. See the alternative map to find where the lifts are located.

ACTIVE The maximum number of skiers actively engaged in skiing activities at one time in this pod.

INACTIVE 25% of the number of active skiers

% UTIL An educated guess, based on experience and observation, of the percentage of skiers from a lift that will ski within this pod.

SAOT Skiers At One Time. The total of Active and Inactive skiers, divided by % UTIL to find the actual design capacity of the pod.

SEASON Estimated average season days to be expected for a particular pod. The figures were determined on the basis of comparisons with similar terrain at Mammoth Mountain, which varies from 87 days per season near Chair 15 to an average of 225 days at Base Lodge #1.

20% UTIL, 40% UTIL,
60% UTIL, 55% UTIL

Projected season total of skier visits at low (20%), medium (40%), and high (60%) rates of utilization. Mammoth Mountain operates at an average utilization rate of 55%, so this calculation is included for comparison. The utilization rate is achieved by multiplying SAOT by SEASON, and multiplying the result by % UTIL.

2 ALTERNATIVE I

Alternative I is a small-scale development plan serving 4,000 skiers from the Snowcreek base area. Five fixed grip chair lifts provide transportation to trails on the north face of Sherwin Mountain, in the glacial moraine glades, and in Sherwin Bowl. Due to the low skier capacity, the design excludes Solitude Canyon and the slopes in the eastern part of the site that descend into the Motocross area.

SEASON & UTILIZATION

This alternative offers an 18/39/43 proportion between beginner, intermediate, and advanced terrain. 33% of gross pod terrain would be utilized. Season length varies from 87 days in pods A and E to 175 days in pod C; the average season length for all pods is 122 days. At a 40% utilization rate, this alternative would accomodate 184,373 skiers annually.

LODGES

Snowcreek Base stages 3,000 skiers and provides day lodge functions for the entire mountain. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Fingers Station stages 1,000 skiers. Facilities include ticket sales, restrooms, a shuttle stop, and lift machinery.

LIFTS

1 A transportation lift that runs from Snowcreek Base to a knob in the Moraines area. It provides access to the beginners' runs above the base lodge, the trails that lead to Fingers Station, and the intermediate runs in the Motocross area.

3a Connecting Fingers Station with the Judge's Bench, this lift serves the advanced runs on the north face. It is the first leg of a two-stage lift between Fingers and Sherwin Bowl.

3b A lift continuing from the Judge's Bench to the saddle below Red Peak, giving access to the intermediate runs in Sherwin Bowl.

4 An alternate second leg, connecting the Judge's Bench with the area near Fingers Peak. It serves the advanced and expert runs on the North Face, as well as the intermediate trails that return to the Judge's Bench.

5 This lift provides access to the beginner and intermediate runs between the Moraines and the Motocross.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

4,000 SAOT x 90%	=	3,600
Less Ski School	-	60
Total Requirement		3,540

The main transit lifts are:

1 Total capacity: 1,851 skiers per hour, or 3,702 skiers over two hours. The lift serves pod D, which will require 1,755 seats; and pod E, which will require 515 seats.The remaining 1,432 skiers will proceed to lift 3a for transport to the North Face.

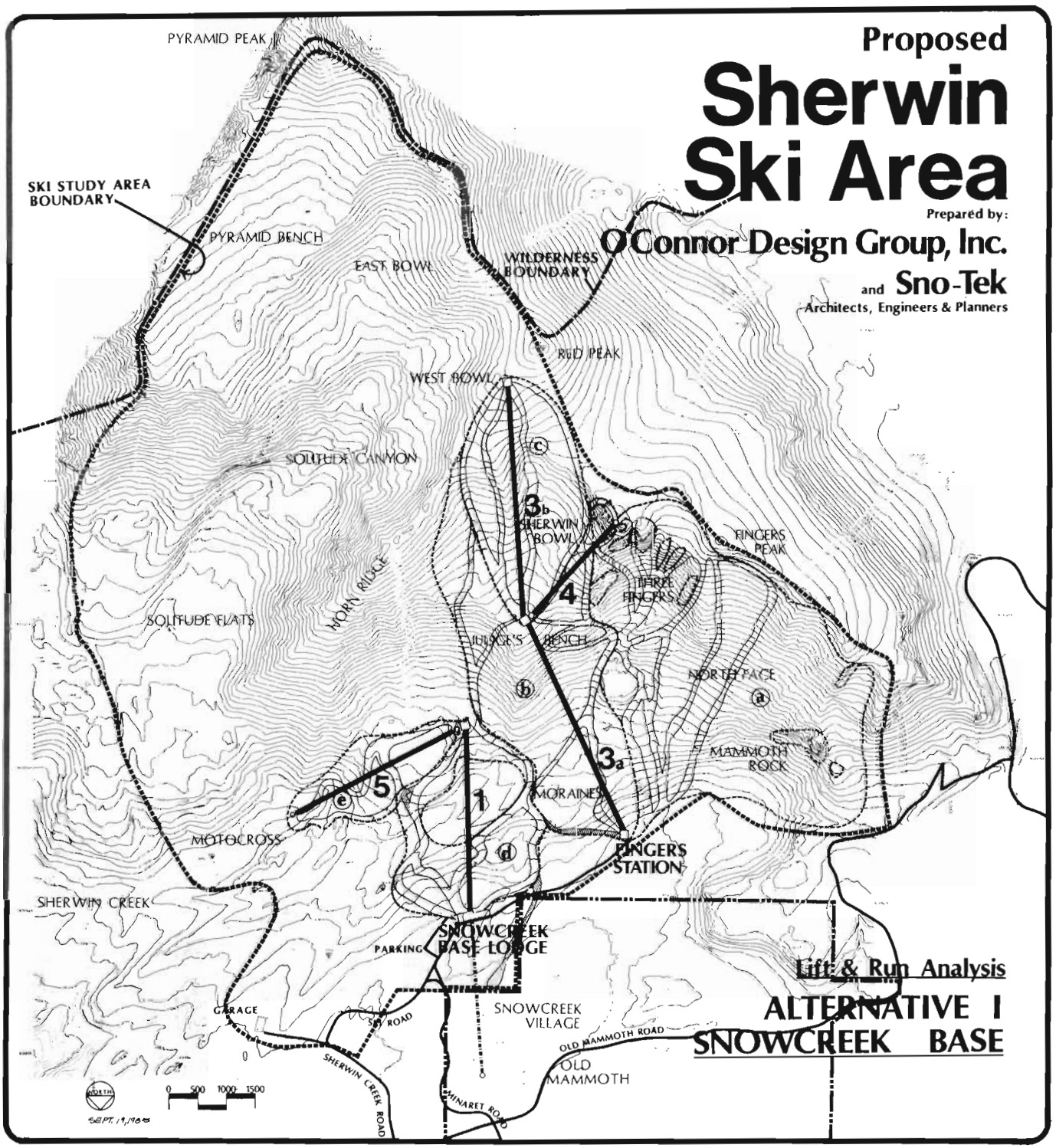
1,778 skiers are anticipated to ski pods A and C on the North Face. 1,432 are accounted for above; the remaining 346 would be shuttled to Lift 3a.

3a Total capacity: 1,710 per hour, or 3,420 over two hours. The 1,778 skiers on the North Face could be served by this lift alone. Internal pod A skiers total 2,171 over the peak two hours, leaving 1,249 seats for pod C's 702 skiers.

As determined above, 3,540 skiers would need to be transported. The actual capacity would be 4,087 skiers—a surplus of 547 skiers.

AVALANCHE

Under Alternative I, the areas northwest of Horn Ridge and south of the Moraines would require avalanche control, along with a small part of the Motocross. Control efforts would require eight avalanche control personnel, two avalaunchers, and one overnight facility at Sherwin Station.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
PYRAMID PEAK
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RUD PEAK
WEST BOWL
SOLITUDE CANYON
3b
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
4
WORN RIDGE
SOLITUDE FLATS
JULGE'S BENCH
NORTH FACE
MAMMOTH ROCK
3a
5
1
MORAINES
MOTOCROSS
FINGERS STATION
SHERWIN CREEK
SNOWCREEK BASE LODGE
PARKING
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
MINARET ROAD
0 500 1000 1500
SEPT. 19, 1985
Lift & Run Analysis
ALTERNATIVE I
SNOWCREEK BASE

ALTERNATIVE I - LIFTS - SNOWCREEK BASE

	NUMBER	1	3a	3b	4	5										TOTALS	PERCENT
	TYPE	FG	FG	FG	FG	FG											
LIFT	# PASS	4	4	3	3	3											
BASICS	CLASS	B/N	A	I	I/A/E	N/I											
	CAP/HR(m)	1.566	1.710	1.495	1.710	.895										7.376	
	S/F	1.15	.9	1	.95	1.08											
	CHAIR SEP	47.5	47.5	45	47.5	43.6											
	TRANS.CAP.	1.851															
	HORIZ (m)	3.300	4.200	4.200	2.200	2.900										16.800	
	VERT (m)	.700	1.430	1.130	.870	.670										4.800	
	LEN (m)	3.373	4.437	4.349	2.366	2.976										17.502	
DESIGN	VTF (mil)	1.096	2.445	1.689	1.488	.600										7	
	DEGREES	11.98	18.80	15.06	21.58	13.01											
	% SLOPE	21	34	27	40	23											
	DERATE	1	1	1	1	1											
	IN LINE	.261	.285	.249	.285	.149										1.229	32
	ON LIFT	.284	.374	.290	.149	.205										1.302	34
CAPACITY	ON RUNS	.327	.336	.290	.142	.221										1.316	34
ANALYSIS	ACTIVE	.872	.995	.829	.576	.575										3.847	80
	INACTIVE	.218	.249	.207	.144	.144										.962	20
	MAX CAP	1.090	1.244	1.036	.720	.719										4.809	
	OLF															.809	17
	SAOT															4.000	
	BEGIN	.174														.174	5
	NOVICE	.698				.345										1.043	26
ACTIVE	NOV/INT			.166		.230										.396	10
DISTRIBUTION	INTERMED			.497	.115											.612	16
ANALYSIS	INT/ADV		.298	.166	.173											.637	17
	ADVANCED		.399		.173											.572	15
	EXPERT		.298		.115											.413	11

ALTERNATIVE I - TRAILS - SNOWCREEK BASE

POD DES	POD ACRES	SKIIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	419.4	ADV	3a	.80	995									
			4	.70	576	.895	1073	7	153	155	43090	7400	5.8	.37
b	241.3	ADV	3a	.20	995									
			3b	.05	829	.895	215	7	31	120	11160	7400	1.5	.13
c	153.5	INT	3b	.95	829	.895	705	14	50	165	13292	4400	3.0	.33
d	92.0	BEG	1	1.00	872	.895	780	18	43	140	13490	4700	2.9	.47
e	46.4	BEG	5	1.00	575	.895	515	16	32	165	8491	4300	2.0	.69
TOTAL	952.6		4				3288.4	10.6	309.9		**16.9 mi.**	5891	15.2	.33

ALTERNATIVE I - UTILIZATION - SNOWCREEK BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	PAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a.	3a	828	207	.80	828	87	14407	28815	43222	39620
	4	479	120	.70	419	87	7296	14593	21889	20065
b.	3a	828	207	.20	207	87	3602	7204	10805	9905
	3b	690	172	.05	43	175	1508	3017	4525	4148
c.	3b	690	172	.95	819	175	28662	57323	85984	78819
d.	1	726	181	1.00	907	150	27206	54413	81619	74818
e.	5	437	109	1.00	546	87	9505	19010	28514	26138
TOTALS					3769	122	92186	184373	276559	253513

SOILS

During the two phases of construction, 88 acres will be disturbed. Of these, an estimated 52 acres will be revegetated with shrubs and meadow grasses.

WATER

Wells would be located near Snowcreek Base and the Motocross.

Domestic Snowcreek Base and Fingers Station could obtain water from the Snowcreek well if adequate resources can be proven; or from MCWD sources via Old Mammoth Road, if available. A domestic water storage tank would be constructed near Snowcreek Base. The maintenance garage would be supplied by a small separate well nearby. Domestic water demand at 55% utilization is projected at 7.78 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 19 acres of storage ponds (at an average depth of six feet) would be required. The 20 acres of ponds and small lakes on the Snowcreek Golf Course may be used for storage if an easement were procured from the golf course owner. Storage could also be obtained by installing steel tanks, or lining the natural basins the Moraines area, creating ponds. Projected water demand for snowmaking is 115.1 acre-feet per year.

Estimated annual irrigation demand for revegetation is 66.3 acre-feet per year. Irrigation would continue until ground cover is well-established and able to maintain itself without supplemental water. This is anticipated to occur by the fourth year (the second year after build-out).

The Motocross well is expected to supply water to irrigation/snowmaking storage facilities. Water for fire prevention at Snowcreek Base would also come from this source. This well appears to be a potentially significant water resource, and the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Sewer Sewer facilities are required at Snowcreek Base, Fingers Station, and the maintenance garage. Fingers Station would connect with Snowcreek Base, which in turn would connect with existing lines at Old Mammoth Road. The garage would require a pump station and connect with the Snowcreek Base line. Wastewater output is estimated at 20,070 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 8,067 kilowatts per year, with another 492 kw needed in the event of snowmaking. Underground electrical and telephone lines would connect with existing systems via Snowcreek Village.

Estimated fuel oil annual demand is 13,420 gallons per year. Fuel oil and solid waste will be transported to and from the site by truck.

Development of active and passive solar space heating would be limited due to the low direct solar and albedo potential of this alternative.

VISUAL IMPACT

This alternative has a lift and trail configuration in the north face area similar to that of Alternatives II, V, and VII, which each accommodate 8,000 skiers. Therefore, the visual impact would be similar as seen from the community and Lake Mary Road. Proposed modifications involve seven of the 12 seen visual regions of the site. This alternative would have the least impact as seen from US 395 and Sherwin Creek Road. To meet or exceed the Visual Quality Objective of Partial Retention, a site-specific visual analysis would be completed during the design development and environmental analysis phases of the project. The findings would be used in the design process.

TRANSPORTATION

A 6.98-acre parking lot accommodates 810 cars and 15 buses. Eight shuttle buses would transport skiers from the lot to the Fingers lift station.

2.39 miles of access road would be constructed, including the Minaret Road extension through to the base lodge and a shuttle bus road between the base lodge and the Fingers station. An estimated 500 skiers would be able to walk to the slopes from the Snowcreek Village area.

The ski area maintenance garage is located in the northeast corner of the site, about 1200' east of the Ski Road intersection on Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in two phases. Phase 1 includes lifts 1a, 3a, and 3b, bringing the capacity to 2,803. Phase 2 adds 1,197 skiers on lifts 4 and 5, increasing the capacity to 4,000.

WILDLIFE

This alternative places the base lodge, Lifts 1 and 3a, and ski trails within the deer migration route toward Mammoth Pass, and within the edge of the spring staging area. These facilities would be closed to skiers during migration, and the presence of ski area personnel would be reduced to a necessary minimum. During spring staging, Lifts 1 and 5 would be closed. Lifts 3a, 3b and 4 and associated trails could be skied only until the beginning of the migration.

Construction of a summer road up Solitude Canyon would be the only disturbance of the Duck Pass route, giving this alternative a comparatively low impact on the herd.

CULTURAL RESOURCES

There are two identified prehistoric sites that may be affected by this alternative. The first, identified as SC #2 in the reconnaissance study, is a possible hunting site located below Red Peak. The second, identified as SC #4, is a possible occupation site in the Moraines.

Cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the vicinity of the site would cease immediately, and the Forest Cultural Resources Manager would be notified. If any site were negatively affected, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative I are estimated at $16.35 million, or $4,088 per SAOT. Gross annual revenues are $8.44 million, with annual operating costs totalling $6.08 million and a 12.7% return on equity. 162 employees would be needed to operate the mountain.

PROS

The advantages of Alternative I are largely a result of its compact design, which mostly avoids the deer herd's spring staging area. It presents the lowest revegetation need, lowest water demand, lowest skier density, lowest capital costs, fewest structures and least parking area of any alternative. In addition, avalanche control would not be required in Solitude Canyon, since there would be no trails there.

CONS

The limited capacity of this alternative makes it economically marginal. It has the shortest season of any alternative, and fall and spring skiing are available only on the intermediate and advanced runs in Solitude Bowl and the North Face. Heavy snowmaking would be required to maintain the lower beginners' slopes during early and late season.

The 4,000-skier capacity does not accomodate the estimated 6,000 skiers lodging in adjacent Snowcreek Village; nor does it answer the demands of the growing western U.S. ski market.

A summer maintenance road would need to be developed in Solitude Canyon to serve Solitude Lodge and Sherwin Station, though there are no facilities in the canyon itself. Constructing and maintaining this road would represent an excessive expense for the amount of return recieved.

The visual impact of this plan is similar to that of alternatives accommodating twice as many skiers.

Alternative I offers no opportunity for summer rides or other off-season use of facilities.

2 ALTERNATIVE II

Alternative II serves 8,000 skiers from the Snowcreek base area. Six detachable and five fixed-grip lifts provide access to slopes in Sherwin Bowl, Solitude Canyon, Solitude East and West Bowls, and on the North Face and Pyramid Peak.

SEASON & UTILIZATION

This alternative offers a 17/42/41 proportion between beginner, intermediate, and advanced terrain. 31% of the gross pod terrain would be utilized. Season length varies from 87 days in pods D, E and G to 175 days in pods A, B, C, I, J and K; the average season length for all pods is 145 days. At a 40% utilization rate, this alternative would accommodate 464,128 skiers annually.

LODGES

Snowcreek Base provides staging for 5,500 skiers and day lodge services for 3,500. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Fingers Station stages the remaining 2,500 skiers. In addition to lift machinery, it includes ticket sales and restrooms.

Canyon Lodge provides day lodge support for 3,500 skiers. Services include food service, restrooms, repair shop, safety office, and lockers.

Solitude Lodge will be the day lodge for 1,000 skiers. A small pre-prepared food service facility, restrooms, and a sun deck are planned.

Ridge, Sherwin and Pyramid Stations house lift machinery.

LIFTS

1a The first link in a three-lift transit system leading to Solitude Canyon, this detachable quad lift connects Snowcreek Base with a knob in the Moraines. It also serves the beginner/novice runs in the Moraines area.

1b A detachable quad lift continuing from the Moraines to the summit of Horn Ridge. In addition to providing transit, it serves the advanced runs on the northwest face of the ridge.

1c The final detachable quad lift in the link connecting Horn Ridge with Canyon Lodge. It also serves some short advanced runs on the southeast face of the ridge.

2 A three-passenger detachable lift that takes skiers to the Pyramid Peak area, in addition to serving trails in Solitude East and West Bowls.

3a A principal morning transit lift ascending from Fingers Station to the Judge's Bench. The detachable triple lift also serves the advanced trails below the bench.

3b Continuing from the Judge's Bench to Solitude Lodge, this detachable triple lift serves the intermediate runs in Sherwin Bowl, and provides access to Solitude Canyon.

4 A fixed-grip triple lift connecting the Judge's Bench with the area near Fingers Peak. It serves the advanced and expert runs on the North Face, as well as the intermediate trails that return to the Judge's Bench.

5 A fixed-grip lift ascending from the Motocross area to the Moraines knob. It serves beginners' trails.

6 The beginners' runs in Solitude Flats are served by a fixed-grip lift ascending to Canyon Lodge.

7 A fixed-grip transit lift between Canyon Lodge and Solitude Lodge. It also serves the intermediate runs in West Bowl.

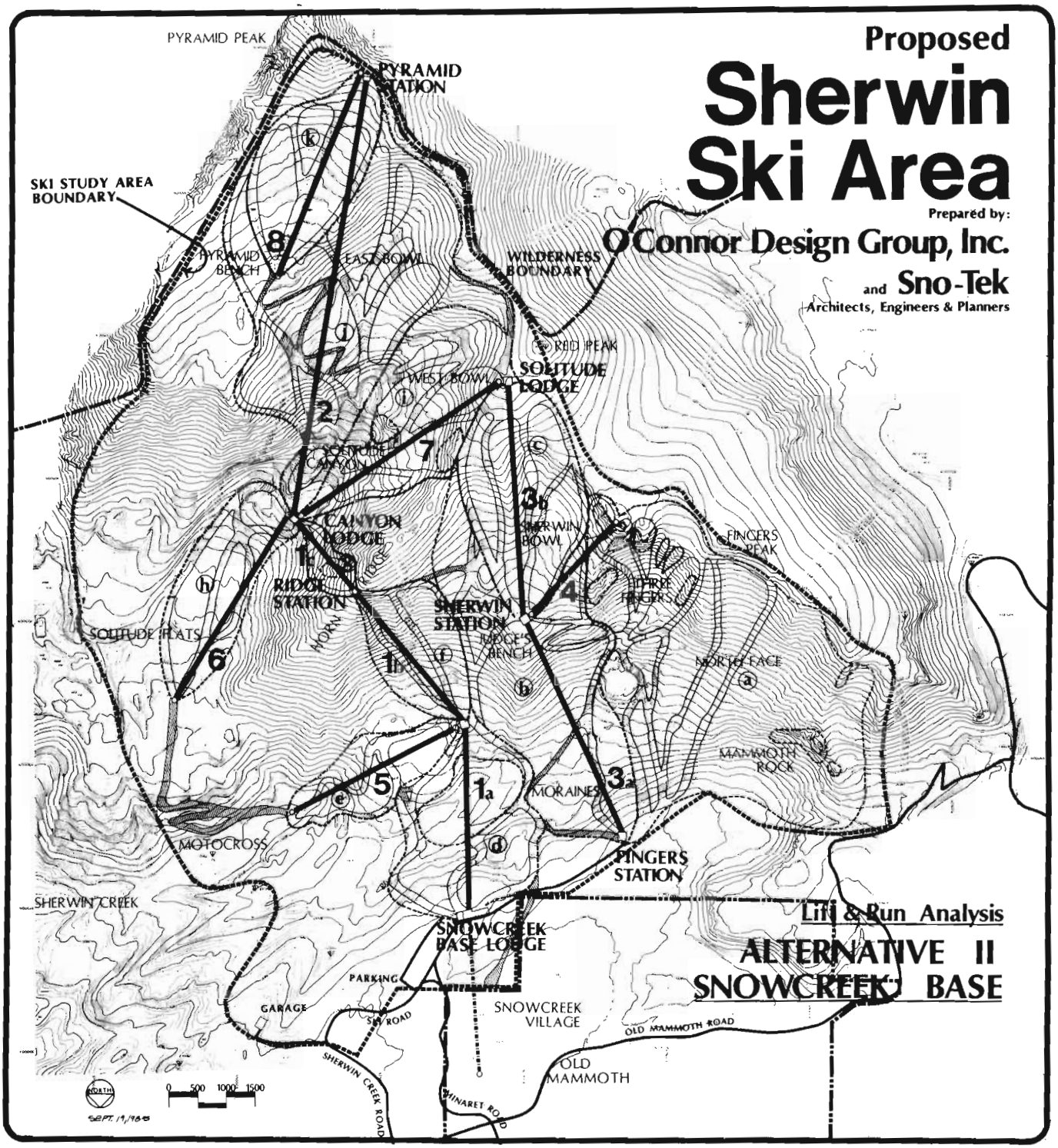
8 A fixed-grip lift connecting Pyramid Bench with Pyramid Peak, providing access to the beginners' runs at the top of the mountain.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

8,000 SAOT x 90%	=	7,200
Less: Ski School		- 100
Total Requirement		7,100

The main transit lifts include:

1a, b, c Total capacity: 2,800 skiers per hour, or 5,600 over the peak two hours. These lifts will serve as transit only during this time. 5,415 skiers are anticipated to upload at this lift.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
PYRAMID STATION
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE LODGE
SOLITUDE CANYON
CANYON LODGE
RIDGE STATION
SHERWIN STATION
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
RIDGE'S BENCH
MORTEE FACE
SOLITUDE FLATS
MAMMOTH ROCK
MORAINES
MOTOCROSS
FINGERS STATION
SHERWIN CREEK
SNOWCREEK BASE LODGE
PARKING
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
MINARET ROAD
NORTH
0 500 1000 1500
SEPT. 19, 1985
Lift & Run Analysis
ALTERNATIVE II
SNOWCREEK BASE

ALTERNATIVE II - LIFTS - SNOWCREEK BASE

	NUMBER	1a	1b	1c	2	3a	3b	4	5	6	7	8				TOTALS	PERCENT
	TYPE	DET	DET	DET	DET	DET	DET	FG	FG	FG	FG	FG					
LIFT	# PASS	4	4	4	3	3	3	3	2	3	3	2					
BASICS	CLASS	B/N	A/E	A/E	I	A	I	I/A/E	N/I	B/N	I	N					
	CAP/HR(m)	2.400	2.400	2.400	2.250	2.250	2.250	1.710	.895	1.342	1.495	.895				20.287	
	S/F	1.15	.900	.900	.95	.95	.950	.950	1.150	1.150	1.000	1.150					
	CHAIR SEP	47.5	47.5	47.5	47.5	47.5	47.5	45.0	43.6	43.6	45.0	43.6					
	TRANS.CAP.	2.800	2.800	2.800													
	HORIZ (m)	3.300	3.000	1.650	7.850	4.200	4.200	2.200	2.900	3.800	4.400	3.800				41.300	
	VERT (m)	.700	1.270	.790	2.190	1.430	1.130	.870	.670	.630	1.420	.770				11.870	
	LEN (m)	3.373	3.258	1.829	8.150	4.437	4.349	2.366	2.976	3.852	4.623	3.877				43.091	
DESIGN	VTF (mil)	1.680	3.048	1.896	4.928	3.217	2.542	1.488	.600	.845	2.123	.689				23.056	
	DEGREES	12.0	22.9	25.6	15.6	18.8	15.1	21.6	13.0	9.4	17.9	11.5					
	% SLOPE	21.2	42.3	47.9	27.9	34.0	26.9	39.5	23.1	16.6	32.3	20.3					
	DERATE	.83	.17	.11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
	IN LINE	.332	.068	.044	.375	.375	.375	.285	.149	.224	.249	.149				2.625	35
	ON LIFT	.236	.047	.017	.515	.280	.275	.158	.137	.265	.308	.178				2.414	32
CAPACITY	ON RUNS	.271	.042	.015	.489	.266	.261	.150	.157	.305	.308	.205				2.469	33
ANALYSIS	ACTIVE	.839	.157	.076	1.379	.921	.911	.593	.443	.793	.866	.532				7.508	80
	INACTIVE	.210	.039	.019	.345	.230	.228	.148	.111	.198	.216	.133				1.877	20
	MAX CAP	1.049	.196	.095	1.723	1.152	1.138	.741	.553	.992	1.082	.664				9.386	
	OLF															1.386	15
	SAOT															8.000	
ACTIVE	BEGIN	.168								.397						.565	7
DISTRIBUTION	NOVICE	.671							.221	.396		.266				1.555	20
ANALYSIS	NOV/INT				.276		.228		.133			.266				.902	12
	INTERMED				.414		.455	.119	.089		.433					1.509	20
	INT/ADV				.414	.307	.228	.178			.433					1.559	22
	ADVANCED		.157		.275	.307		.178								.916	12
	EXPERT			.076		.307		.118								.501	7

ALTERNATIVE II - TRAILS - SNOWCREEK BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	419.4	ADV	3a	.80	921	.853								
			4	.70	593	.853	983	7	140.4	155	39448	7400	5.3	.33
b	241.3	ADV	3a	.20	921	.853								
			3b	.05	911	.853	196	7	28	110	11087	7400	1.5	.12
c	153.5	INT	3b	.95	911	.853								
			4	.30	593	.853	890	14	64	165	16782	4400	3.8	.41
d	92.0	BEG	1a	1.00	839	.853	716	18	40	140	12371	4700	2.6	.43
e	46.4	BEG	5	1.00	443	.853	378	16	24	150	6859	4300	1.6	.51
f	67.1	ADV	1b	1.00	157	.853	134	8	17	125	5834	3200	1.8	.25
g	15.1	ADV	1c.	1.00	76	.853	65	8	8	125	2824	1800	1.6	.54
h	106.2	BEG	6	1.00	793	.853	676	20	34	140	10523	4350	2.4	.32
i	151.0	INT	7	1.00	866	.853	739	14	53	120	19153	5900	3.2	.35
j	301.9	INT	2	1.00	1379	.853	1176	12	98	130	32846	7050	4.7	.32
k	116.5	BEG	8	1.00	532	.853	454	17	27	120	9690	3700	2.6	.23
TOTAL	1710.4		8				6406	12	531		**31.7 MI.**	**5366**	31.2	.31

ALTERNATIVE II - UTILIZATION - SNOWCREEK BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	SAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a	3a	785	196	.80	785	87	13651	27301	40952	37539
	4	505	126	.70	442	175	15468	30935	46403	42536
b	3a	785	196	.20	196	150	5884	11768	17652	16181
	3b	776	194	.05	49	175	1698	3396	5095	4670
c	3b	776	194	.95	922	175	32252	64505	96758	88694
	4	505	126	.30	189	175	6627	13253	19880	18223
d	1a	715	179	1.00	894	87	15551	31102	46654	42766
e	5	377	95	1.00	472	87	8213	16426	24639	22586
f	1b	134	33	1.00	167	150	5010	10020	15029	13777
g	1c	65	16	1.00	81	87	1408	2817	4225	3873
h	6	676	169	1.00	844	135	22797	45594	68391	62692
i	7	738	184	1.00	922	175	32265	64530	96796	88729
j	2	1175	294	1.00	1469	175	51410	102819	154229	141377
k	8	453	113	1.00	567	175	19830	39661	59491	54533
TOTALS					7997	145	232064	464128	696192	638176

3a Total capacity: 2,250 per hour, or 4,500 for two hours. 1,685 skiers would be shuttled to Fingers Station to upload here to pods A and C.

The capacity of lift 3a for uploading is 4,500 minus 2,212 internal pod A skiers, for a transit surplus of 2,288 skiers. The total peak transit capacity is 5,600 skiers plus 2,288 skiers: a total of 7,888 skiers.

AVALANCHE

Under Alternative II, the entire mountain is available for skiing, and all identified areas would require control. Control efforts would require 12 avalanche personnel, five avalaunchers, and one overnight facility at Solitude Lodge.

This alternative provides the best lift and facility locations to avoid avalanche paths, thus avoiding expensive protection structures and possible lost operating days due to lift damage. Lift replacement costs are also avoided.

SOILS

During the three phases of construction, 143 acres will be disturbed. Of these, an estimated 83 acres will be revegetated with shrubs and meadow grasses.

WATER

Wells would be located near Snowcreek Base, Canyon Lodge and the Motocross.

Domestic Snowcreek Base and Fingers Station could obtain water from the Snowcreek well if adequate resources were proven, or from MCWD sources via Old Mammoth Road, if available. A domestic water storage tank would be constructed near Snowcreek Base. Canyon Lodge would be served by its nearby well; water from this well would also be pumped to Solitude Lodge. The maintenance garage would be served from a small separate well nearby. Domestic water demand at 55% utilization is projected at 19.1 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 21 acres of storage ponds (at an average depth of six feet) would be required. The 20 acres of ponds and small lakes on the Snowcreek Golf Course may be used for storage, if an easement were procured from the golf course owner. Storage could also be obtained by installing steel tanks, or lining the natural basins the Moraines area, creating ponds. Projected water demand for snowmaking is 124.3 acre-feet per year.

Estimated annual irrigation demand for revegetation is 88.3 acre-feet per year. Irrigation would continue until ground cover is well established and able to maintain itself without supplemental water. This is anticipated to occur by the fourth year (the second year after build-out).

The Motocross well is expected to supply water to irrigation/ snowmaking storage facilities. This well appears to be a potentially significant water resource, and the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Snowcreek Base would come from the irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H. Solitude Lodge would be equipped with sprinklers drawing on the domestic supply.

Sewer Sewer facilities are required at Snowcreek Base, Fingers Station, Canyon Lodge, Solitude Lodge and the maintenance garage. Fingers would connect directly with Snowcreek Base; Solitude Lodge would connect with Canyon Lodge, from which a pipeline would be routed down through the Motocross area and over to Snowcreek Base. From Snowcreek Base, the main line would then connect with existing lines at Old Mammoth Road. The garage would require a pump station and connect with the Snowcreek Base line. Wastewater output is estimated at 41,730 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 26,896 kilowatts per year, with another 531 kw needed in event of snowmaking. Underground electrical and telephone lines would connect with existing systems via Snowcreek Village.

Estimated annual fuel oil consumption is 331,900 gallons per year. Fuel oil would be transported to the site by truck.

Solid waste would be transported from the mountain lodges by ski lift, and from the base lodge by truck.

Development of active and passive solar space heating is limited due to the low solar albedo potential of this alternative.

VISUAL IMPACT

This alternative is similar to all of the 8,000 and 12,000 SAOT alternatives, involving 11 of the 12 seen visual regions of the site. The proposed lift to the top of Horn Ridge may not meet the Visual Quality Objective of Partial Retention, even with mitigation. A site-specific visual analysis would be complete during the design development and environmmental analysis phases of the project, and the findings of that analysis be used in the design process.

WILDLIFE

Lifts 1a, 2, 5, 6, and 7, numerous ski runs, Snowcreek Baselodge, and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. These facilities would be closed to skiers during migration, and the presence of ski area personnel would be reduced to a necessary minimum. The presence of the facilities themselves, however, would have some impact. During spring staging, Lifts 1a, 1b, 1c, and 5 would be closed. The rest of the lifts and their associated trails could be skied until migration begins.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possbile. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

Spring skiing could probably be continued in the upper elevations while deer are congregating in the staging area. The Spring Burnoff & Wind Scour map (page 86) and the Staging Area map (page 102) indicate that skiing would necessarily avoid the staging area. The operation of Snowcreek Base and Lift 1a to and from the skiable terrain would have some, as yet unknown, impact on the deer, since these activities are located on the edge of the staging area. Both migration routes would be affected once the deer began moving out of the staging area. Therefore, skiing activities would cease at that time.

A system to monitor spring and fall migration would developed, along with a closure plan.

TRANSPORTATION

A 15.2-acre parking lot accommodates 1,770 cars and 30 buses. Sixteen shuttle buses would be used to transport skiers from the lot to the Fingers lift station.

2.39 miles of access road would be constructed, including the Minaret Road extension through to the base lodge and a shuttle bus road between the base lodge and Fingers Station. Sherwin Creek Road would be paved up to the Ski Road. An estimated 500 skiers would be able to walk to the slopes from Snowcreek Village.

The ski area maintenance garage is located in the northeast corner of the site, about 1,200' east of the Ski Road intersection on Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in three phases. Phase 1 includes lifts 1a, 3a, and 3b, bringing the capacity to 2,846. Phase 2 adds lifts 1b, 1c, 4, 5 and 7, increasing the capacity to 5,120. The final phase, with lifts 2, 6 and 8, brings the total SAOT to 8,000.

CULTURAL RESOURCES

There are two identified prehistoric sites that may be affected by this alternative. The first, referred to as SC #2 in the reconnaissance study, is a possible hunting site located below Red Peak. The second, SC #4, is a possible campsite in the Moraines.

Cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative II are estimated at $35.07 million, or $4,384 per SAOT. Gross annual revenues are $18.00 million, with annual operating costs totalling $13.41 million and a 18.6% return on equity. 326 employees would be needed to operate the mountain.

PROS

Alternative II takes advantage of the high-quality ski terrain in the Pyramid Peak and Solitude Bowl areas. These regions enjoy a longer ski season than the North Face and Moraines regions, extending the mountain's overall season.

The 8,000 SAOT capacity is consistent with the community's planned skier capacity, and contributes significantly to fulfilling the expected market demand. The greater potential economic viablity (as compared with alternatives accommodating 4,000 skiers) should result in a higher economic return to the Mammoth Lakes region.

Lift and lodge locations are best situated to avoid avalanche damage.

CONS

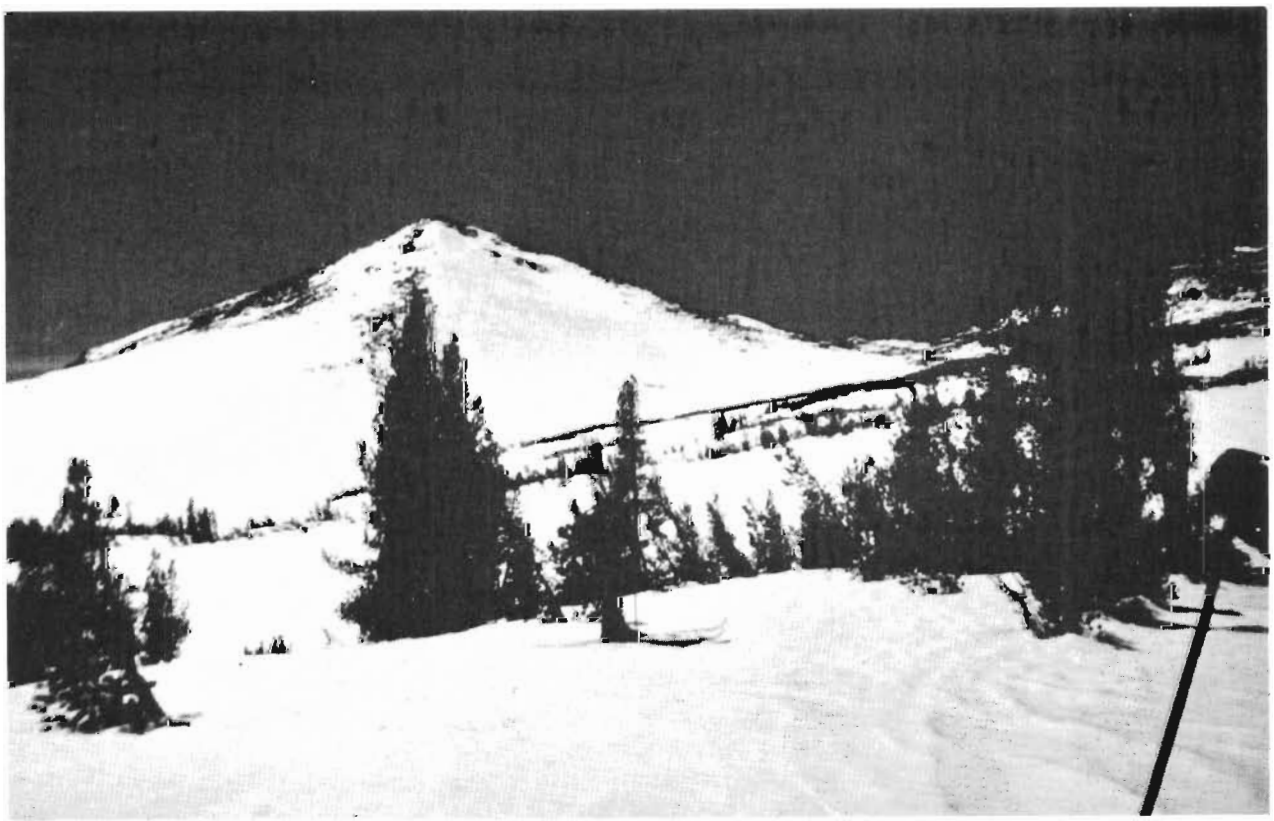
Lifts 3a and 4, though aligned to avoid avalanche areas on the North Face, would not provide optimal access to trails in the Fingers area. At the top of 4, skiers are required to unload in difficult terrain and traverse westward through narrow trails before gaining access to North Face runs.

Lifts 1a, 1b and 1c traverse extremely difficult terrain in order to give access to Solitude Canyon. The lifts provide marginal skiing, and would be subject to frequent closure due to high winds on Horn Ridge.

In case of lift failure, high winds, or other emergency, evacuation from Pyramid Peak and Solitude Canyon would involve sending skiers down through the Motocross area and then up Chair #5—a procedure that could take over four hours on a peak day.

This alternative offers less beginner terrain than any other scenario.

Some ski area facilities would be visible outside the area on Sherwin Lakes Trail.



2 ALTERNATIVE III

Alternative III serves 12,000 skiers from the Snowcreek base area. Six detachable and seven fixed-grip lifts provide access to all skiable areas within the Sherwin boundary.

SEASON & UTILIZATION

The alternative offers an 18/37/45 proportion between beginner, intermediate and advanced terrain. 43% of gross pod terrain would be utilized.

Season length varies from 87 days in pods E, G and L to 175 days in pods A, B, C, I, J and K; the average season length for all pods is 146 days. At a 40% utilization rate, this alternative would accomodate 702,388 skiers annually.

LODGES

Snowcreek Base provides staging for 5,500 skiers and day lodge services for 5,000. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Fingers Lodge stages 5,000 skiers and provides day lodge facilities for 1,000. Amenities planned include a small food service area, restrooms, lockers, rental and repair shop, ski patrol, and first aid station.

Canyon Lodge provides day lodge support for 5,000 skiers. Services include food service, restrooms, repair shop, safety office, and lockers.

Solitude Lodge is the day lodge for 1,000 skiers. A small pre-prepared food service facility, restrooms, and a sun deck are planned.

Moraine Station is a shuttle stop staging 1,500 skiers. Facilities include restrooms and ticket sales.

Ridge Station, Midstation, Sherwin Station and **Pyramid Station** each house lift machinery.

LIFTS

1a The first link in a three-lift transit system leading to Solitude Canyon, this detachable quad lift connects Snowcreek Base with Midstation, in the Moraines. It also serves the beginner and novice runs in the Moraines area.

1b A detachable quad lift continuing from the Moraines to the summit of Horn Ridge. In addition to providing transit, it serves the advanced runs on the northwest face of the ridge.

1c The final detachable quad lift in the link connects Horn Ridge with Canyon Lodge. It also serves some short advanced runs on the southeast face of the ridge.

2 A detachable lift that takes skiers to the Pyramid Peak area, in addition to serving trails in Solitude East and West Bowls.

3a A principal transit lift ascending from Fingers Station to the Judge's Bench. The detachable triple lift also serves the advanced trails below the bench.

3b Continuing from the Judge's Bench to Solitude Lodge, this detachable lift serves the intermediate runs in Sherwin Bowl, and provides access to Solitude Canyon.

4 A fixed-grip triple lift connecting the Judge's Bench with the area near Fingers Peak. It serves the advanced and expert runs on the North Face, as well as the intermediate trails that return to the Judge's Bench.

5 A fixed-grip lift ascending from the Motocross area to the Midstation. It serves beginners' trails.

6 The beginners' runs in Solitude Flats are served by a fixed-grip lift ascending to Canyon Lodge.

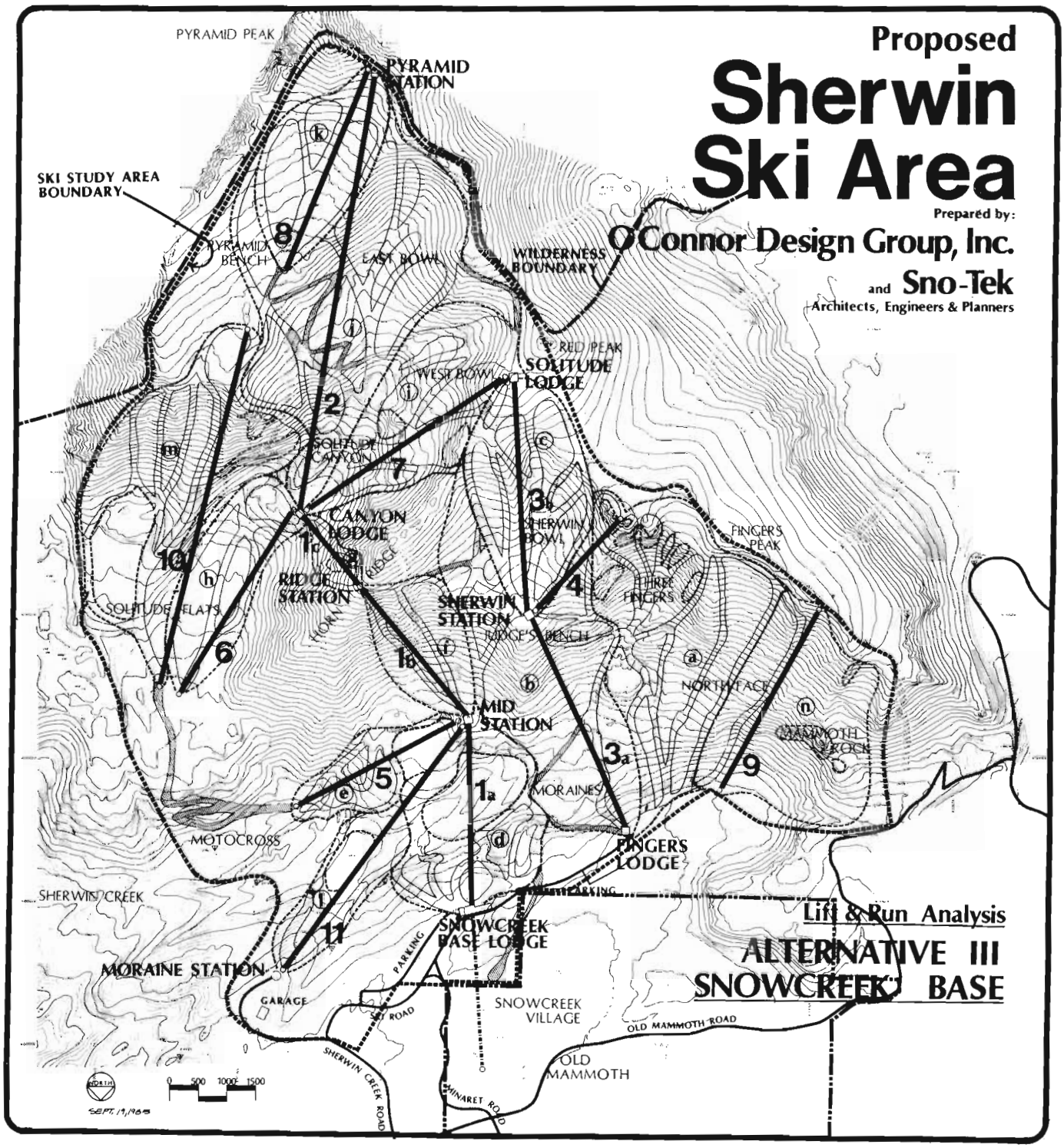
7 A fixed-grip transit lift between Canyon Lodge and Solitude Lodge. It also serves the intermediate runs in West Bowl.

8 A fixed-grip lift connecting Pyramid Bench with Pyramid Peak, providing access to the beginners' runs at the top of the mountain.

9 A fixed-grip triple lift serving the advanced slopes at the far west end of the North Face. It passes not far to the east of Mammoth Rock.

10 A fixed-grip triple lift connecting Solitude Flats to Pyramid Bench. It gives access to the advanced runs below Pyramid Bench.

11 A fixed-grip double lift running from an area near Sherwin Creek Road up to Midstation, in the Moraines. The runs in this area are for beginners and novices.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
PYRAMID PEAK
PYRAMID STATION
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
SOLITUDE LODGE
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
RIDGE STATION
SOLITUDE FLATS
SHERWIN STATION
RIDGE'S BENCH
SHERWIN BOWL
FINGER'S PEAK
THREE FINGERS
NORTH FACE
MAMMOTH ROCK
MID STATION
MORAINES
MOTOCROSS
FINGER'S LODGE
SHERWIN CREEK
PARKING
SNOWCREEK BASE LODGE
MORAINE STATION
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
SHERWIN CREEK ROAD
MINARET ROAD
OLD MAMMOTH
0 500 1000 1500
SEPT. 19, 1968
Lift & Run Analysis
ALTERNATIVE III
SNOWCREEK BASE

ALTERNATIVE III - LIFTS - SNOWCREEK BASE

	NUMBER	1a	1b	1c	2	3a	3b	4	5	6	7	8	9	10	11	TOTALS	PERCENT
	TYPE	DET	DET	DET	DET	DET	DET	FG	FG	FG	FG	FG	FG	FG	FG		
LIFT	# PASS	4	4	4	4	4	4	4	4	4	3	2	3	3	2		
BASICS	CLASS	B	A	A	I/A	I/A	I	A	B/I	B	I	B	A	A	B		
	CAP/HR(m)	2.400	2.400	2.400	2.400	2.400	2.400	2.104	1.566	1.342	1.851	.895	1.710	1.140	.895	25.903	
	S/F	1.15	.90	.90	.95	.95	1.00	.90	1.08	1.15	1.00	1.15	.90	.90	1.15		
	CHAIR SEP	47.5	47.5	47.5	47.5	47.5	47.5	47.5	43.6	43.6	45	43.6	47.5	47.5	43.6		
	TRANS.CAP.	2.800	2.800	2.800		2.800											
	HORIZ (m)	3.300	3.000	1.650	7.850	4.200	4.200	2.200	2.900	3.800	4.400	3.800	3.850	6.450	5.280	56.880	
	VERT (m)	.700	1.270	.790	2.190	1.430	1.130	.870	.670	.630	1.420	.770	2.000	2.030	.700	16.600	
	LEN (m)	3.373	3.258	1.829	8.150	4.437	4.349	2.366	2.976	3.852	4.623	3.877	4.338	6.762	5.326	59.518	
DESIGN	VTF (mil)	1.68	3.05	1.90	5.26	3.43	2.71	1.83	1.05	.85	2.63	.69	3.42	2.31	.63	31.427	
	DEGREES	11.98	22.94	25.58	15.59	18.80	15.06	21.58	13.01	9.41	17.89	11.45	27.45	17.47	7.55	235.768	
	% SLOPE	21	42	48	28	34	27	40	23	17	32	20	52	31	13	428.717	
	DERATE	.88	.17	.12	1	1	1	1	1	.8	1	1	1	1	1	11.970	
																0.0	
	IN LINE	.352	.068	.048	.400	.400	.400	.351	.261	.179	.308	.149	.285	.190	.149	3.540	31
	ON LIFT	.250	.047	.018	.686	.374	.366	.199	.273	.283	.308	.178	.274	.427	.244	3.928	34
CAPACITY	ON RUNS	.287	.042	.017	.652	.355	.366	.179	.295	.325	.308	.205	.247	.384	.281	3.943	35
ANALYSIS	ACTIVE	.889	.157	.083	1.738	1.129	1.133	.729	.829	.787	.925	.532	.806	1.001	.674	11.412	80
	INACTIVE	.222	.039	.021	.435	.282	.283	.182	.207	.197	.231	.133	.201	.250	.169	2.853	20
	MAX CAP	1.112	.196	.104	2.173	1.411	1.416	.911	1.036	.983	1.156	.664	1.007	1.252	.843	14.264	
	OLF															2.264	16
	SAOT															12.000	
	BEGIN	.178								.393					.674	1.246	11
	NOVICE	.712							.414	.394		.266				1.786	15
ACTIVE	NOV/INT				.348		.227		.249			.266				1.089	10
DISTRIBUTION	INTERMED				.521		.680	.146	.166		.462		.161			2.136	19
ANALYSIS	INT/ADV				.521	.376	.226	.219			.463		.242			2.047	18
	ADVANCED		.157		.348	.376		.219					.242	.501		1.841	16
	EXPERT			.083		.377		.145					.161	.500		1.267	11

ALTERNATIVE III - TRAILS - SNOWCREEK BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	237.6	ADV.	3a	.80	1129	.841								
			4	.70	729	.841	1189	7	170	150	49316	7400	6.7	.71
b	241.3	ADV.	3a	.20	1129	.841								
			3b	.10	1133	.841	285	7	41	130	16133.2	7400	2.2	.17
c	153.5	INT.	3b	.90	1133	.841								
			4	.30	729	.841	1041	14	74	165	19640	4400	4.5	.48
d	92.0	BEG.	1a	1.00	889	.841	748	18	42	140	12924	4700	2.7	.45
e	46.4	BEG.	5	1.00	829	.841	697	16	44	150	12654	4300	2.9	.94
f	61.7	ADV.	1b	1.00	157	.841	132	8	17	115	5752	3200	1.8	.27
g	15.1	ADV.	1c	1.00	83	.841	70	8	9	125	3041	1800	1.7	.58
h	106.2	BEG.	6	1.00	787	.841	662	20	33	140	10297	4350	2.4	.31
i	151.0	INT.	7	1.00	925	.841	778	14	56	120	20170	5900	3.4	.37
j	301.9	INT.	2	1.00	1738	.841	1462	12	122	150	35372	7650	5.0	.40
k	116.5	BEG.	8	1.00	532	.841	447	17	26	120	9554	3700	2.6	.23
l	60.2	BEG.	11	1.00	674	.841	567	20	28	140	8818	3400	2.6	.47
m	215.5	ADV.	10	1.00	1001	.841	842	8	105	140	32742	7400	4.4	.49
n	181.8	ADV.	9	1.00	806	.841	678	8	85	140	26363	4800	5.5	.47
TOTAL	1980.7		11				9597	11	850		49.7 mi.	5422	48.4	.43

ALTERNATIVE III - UTILIZATION - SNOWCREEK BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	SAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a	3a	949	237	.80	949	150	28480	56959	85439	78319
	4	613	153	.70	536	175	18771	37541	56312	51619
b	3a	949	237	.20	237	150	7119	14238	21357	19577
	3b	953	238	.10	119	175	4168	8336	12504	11462
c	3b	953	238	.90	1072	175	37517	75033	112550	103170
	4	613	153	.30	230	175	8043	16086	24129	22118
d	1a	748	187	1.00	934	87	16258	32515	48773	44709
e	5	697	174	1.00	871	87	15160	30320	45481	41691
f	1b	132	33	1.00	165	150	4945	9890	14835	13599
g	1c	70	18	1.00	87	87	1522	3044	4566	4185
h	6	662	166	1.00	828	135	22344	44687	67031	61445
i	7	778	194	1.00	972	175	34027	68054	102081	93574
j	2	1462	366	1.00	1827	175	63962	127925	191887	175896
k	8	447.412	112	1.00	559	175	19574	39149	58723	53829
l	11	566.834	142	1.00	709	87	12336	24672	37008	33924
m	10	841.841	210	1.00	1052	150	31563	63125	94688	86798
n	9	677.846	169	1.00	847	150	25407	50813	76220	69868
TOTALS					11996	146	351194	702388	1053582	965783

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

12,000 SAOT x 90%	=	10,800
Less: Ski School		- 280
Lifts 5 & 7		- 1,581
Total Requirement		8,939

The main transit lifts are:

1a, b, c Total capacity: 2,800; 5,600 over two hours. These lifts would serve as transit only during peak hours.

3a Total capacity: 2,800; 5,600 over two hours. 2,250 internal pod A skiers leave a a net transit capacity of 3,350 skiers.

Overall transit capacity is 5,600 (lift 1) plus 3,350 (lift 3a), for a total of 8,950 skiers.

AVALANCHE

Under Alternative III, the entire mountain would be available for skiing and would require avalanche control. Control efforts would require 12 personnel, five avalaunchers, and an overnight facility at Solitude Lodge.

SOILS

During four phases of construction, 214 acres will be disturbed. Of these, an estimated 133 acres will be revegetated with shrubs and meadow grasses.

WATER

Wells would be located near Snowcreek Base, between Snowcreek and the Motocross, at the Motocross, at Canyon Lodge and near Solitude Flats.

Domestic Snowcreek Base and Fingers Lodge could obtain water from the Snowcreek well if this source was proven, or from MCWD sources via Old Mammoth Road if available. A domestic water storage tank would be constructed near Snowcreek Base. Canyon Lodge would be served by its nearby well; water from this well would also be pumped to Solitude Lodge. Moraine Station and the maintenance garage would be supplied by a small separate well near these facilities. Domestic water demand at 55% utilization is projected at 29.65 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 34 acres of storage ponds (at an average depth of six feet) would be required. The 20 acres of ponds and small lakes on the Snowcreek Golf Course may be used for storage if an easement were procured from the golf course owner. Storage could also be obtained by installing steel tanks or lining the natural basins the Moraines area, creating ponds. Projected water demand for snowmaking is 201 acre-feet per year.

Estimated annual irrigation demand for revegetation is 118.4 acre-feet per year. Irrigation would continue until ground cover is well established and able to maintain itself

without supplemental water. This is anticipated to occur by the sixth year (the second year after build-out). The Motocross well is expected to supply water to irrigation/ snowmaking storage facilities. This well appears to be a potentially significant water resource, and the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Snowcreek Base would come from the irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H. Solitude Lodge would be equipped with sprinklers drawing on the domestic supply.

Sewer Sewer facilities are required at Snowcreek Base, Fingers Lodge, Canyon Lodge, Solitude Lodge, Moraine Station and the maintenance garage. Fingers would connect directly with Snowcreek Base; Solitude Lodge would connect with Canyon Lodge, from which a pipeline would be routed down through the Motocross area and over to Snowcreek Base. From Snowcreek Base, the main line would then connect with existing lines at Old Mammoth Road. The garage and Moriane Station would connect with existing lines on Sherwin Creek Road. Wastewater output is estimated at 61,680 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 42,551 kilowatts per year, with another 859 kw needed in the event of snowmaking. Underground electrical and telephone lines wold connect with existing systems via Snowcreek Village.

Estimated annual fuel oil demand is 41,130 gallons per year. Fuel oil will be transported to and from the site by truck.

Solid waste would be transported to the base lodge on ski lifts. From there, it would transported from the ski area by truck.

Development of active and passive solar space heating is limited due to the low solar albedo potential of this alternative.

VISUAL IMPACT

This alternative is similar to all of the 8,000 and 12,000 SAOT alternatives, involving all 12 seen visual regions of the site. The high level of development under this alternative has a correspondingly high visual impact. The proposed lift to the top of Horn Ridge may not meet the Visual Quality Objective of Partial Retention, even with mitigation. A site-specific visual analysis would be complete during the design development and environmmental analysis phases of the project, and the findings of that analysis be used in the design process.

WILDLIFE

Lifts 1a, 2, 3a, 5, 6, 7, 9 and 11, numerous ski runs, Snowcreek Baselodge, Fingers Lodge and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. These facilities would be closed to skiers during migration, and the presence of ski area personnel would be reduced to a necessary minimum. The presence of the facilities themselves, however, would have some impact. During spring staging, Lifts 1a, 1b, 1c, 5, and 11 would be closed. The rest of the lifts and their associated trails could be skied until migration begins.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possible. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

Spring skiing could probably be continued in the upper elevations while deer are congregating in the staging area. The Spring Burnoff & Wind Scour map (page 86) and the Staging Area map (page 102) indicate that skiing would necessarily avoid the staging area. The operation of Snowcreek Base and Lift 1a to and from the skiable terrain would have some, as yet unknown, impact on the deer, since these activities are located on the edge of the staging area. Both migration routes would be affected once the deer began moving out of the staging area. Therefore, skiing activities would cease at that time.

A system to monitor spring and fall migration would developed, along with a closure plan.

TRANSPORTATION

Two parking lots will accommodate 2,730 cars and 45 buses on 23.5 acres. Twenty-four shuttle buses would be used during peak hours to transport skiers from the Snowcreek lot to the Moraines lift station.

2.89 miles of new access road would be constructed, including the Minaret Road extension through to the base lodge, a road between the base lodge and Fingers Lodge, and a side road off Sherwin Creek Road to Moraine Station. Sherwin Creek Road would also require paving. An estimated 500 skiers would be able to walk to the slopes from Snowcreek Village.

The ski area maintenance garage is located near the northern edge of the site, about

1,200' east of the Ski road intersection on Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in four phases. Phase 1 includes lifts 1a, 3a, and 3b, bringing the capacity to 3,314. Phase 2 adds lifts 1b, 1c, 4, 5 and 7, increasing the capacity to 6,176. The third phase, with lifts 2, 6 and 8, enlarges the area to 9,380. The fourth phase encompasses lifts 9, 10 and 11, and brings the total SAOT to 12,000.

CULTURAL RESOURCES

There are two identified prehistoric sites that may be affected by this alternative. The first, referred to as SC #2 in the reconnaissance study, is a possible hunting site located below Red Peak. The second, SC #4, is a possible campsite in the Moraines.

Cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative III are estimated at $49.17 million, or $4,097 per SAOT. Gross annual revenues are $32.46 million, with annual operating costs totalling $20.40 million and a 26.4% return on equity. 484 employees would be needed to operate the mountain.

PROS

Alternative III maximizes the mountain's full ski potiential, with the most skiable terrain and most miles of trail among the alternatives. A long season, with access to the mountain's best slopes, make this alternative extremely solid economically. In addition to providing the maximum public use of the ski resource, this alternative would dramatically enhance Mammoth Lakes' ability to compete as a national-class destination resort.

CONS

Though this alternative demonstrates the potential that exists if Sherwin's full skiing capacity is realized, it offers a lower quality ski experience than alternatives with lower capacities. This is because less undeveloped terrain is available to those who enjoy that experience. Impact on competing recreational uses in the area would be high.

Further, the environmental costs of this alternative will be among the highest of any alternative considered. There is more disturbed acerage than under any alternative, and a significant level of visual impact is unavoidable. Though mitigation is possible, the high level of activity in the deer staging and migration areas is a major consideration. Some facilities will be visible from Sherwin Lakes Trail.

This alternative has the highest capital cost of any alternative.

Lifts 3a and 4, though aligned to avoid avalanche areas on the North Face, do not provide optimal access to trails in the Fingers area. At the top of 4, skiers are required to unload in difficult terrain and traverse westward through narrow trails before gaining access to North Face runs.

Lifts 1a, b, and c traverse extremely difficult terrain to provide access to Solitude Canyon. The lifts provide marginal skiing and would be subject to frequent closure due to high winds on Horn Ridge.

This alternative meets USFS goals to provide for skier demand, since 12,000 SAOT has been determined as the maximum for the Sherwin area. However, 12,000 skiers, together with the projected 24,000 that Mammoth Mountain will eventually accomodate, would bring a total of 36,000 skiers to Mammoth Lakes. This number is 4,000 in excess of the number specified by the Draft Town of Mammoth Lakes General Plan. In short, it will overload the town's planned capacity.

2 ALTERNATIVE IV

Alternative IV is a limited-development plan serving 4,000 skiers from the Motocross base area. Four fixed grip chair lifts provide transportation to trails in Solitude Canyon and on Pyramid Peak. Due to the low skier capacity, the design excludes Solitude West Bowl and all slopes west of Horn Ridge

SEASON & UTILIZATION

This alternative offers a 22/39/39 proportion between beginner, intermediate and advanced terrain. 29% of the gross pod terrain would be utilized. Season length varies from 87 days in pod E to 175 days in pod J; the average season length for all pods is 150 days. At a 40% utilization rate, this alternative would accomodate 234,553 skiers annually.

LODGES

Motocross Base is the staging area for the entire mountain and day lodge for 1,000 skiers. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Canyon Lodge provides day lodge support for 3,000 skiers. Facilities at this location include food service, restrooms, lockers, and safety facilities.

Pyramid Station houses lift terminal equipment.

LIFTS

1 This lift connects Motocross Base with Canyon Lodge and serves the beginners' runs in Solitude Flats. It is the first leg of a two-lift transit chain to the top of the mountain.

2 The second leg of the transit link connects Canyon Lodge with Pyramid Station. This lift serves the beginning runs on Pyramid Bench and the intermediate runs in East Bowl.

5 A short lift ascending from the Motocross Base Lodge up a draw to the southwest, giving access to intermediate runs.

10 This lift connects Solitude Flats with Pyramid Bench, serving advanced and expert trails.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

4,000 SAOT x 90%	=	3,600
Less: Ski School	-	60
Lift 5	-	433
Total Requirement		3,107

The main transit lift is:

1 This lift would be speeded up to run at its full 1,800 skier-per-hour capacity during the peak two hours, or 3,600 skiers total. Internal pod H skiers would total 1,881, leaving a total uphill capacity of 1,719.

The actual transit capacity during peak hours is 3,107 plus 1,719, or a total of 3,826 skiers.

AVALANCHE

Under Alternative IV, Solitude Canyon, East Bowl, Pyramid Bench, and Solitude Flats would be made available for skiing and would require avalanche control. Control efforts would require eight personnel, three avalaunchers, and no overnight facilities.

SOILS

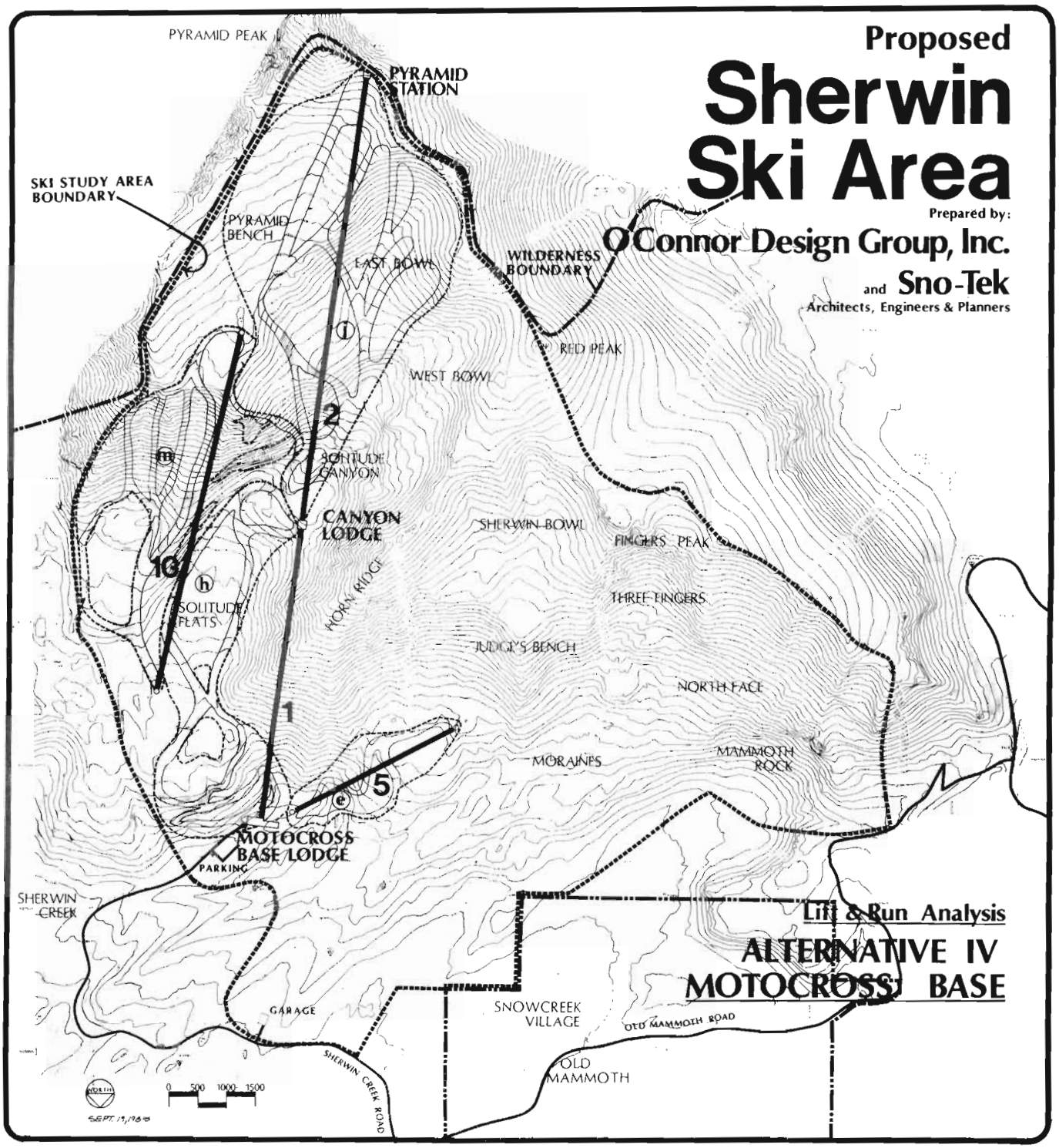
During the two phases of construction, an estimated 74 acres will be disturbed. Of these, 57 acres will be revegetated with shrubs and meadow grasses.

WATER

Two wells would be located near the Motocross, with a third near Canyon Lodge.

Domestic Motocross Base is expected to obtain water from one of the two wells, with a domestic water storage tank located nearby. Canyon Lodge would be served by its nearby well, with a similar storage tank. The maintenance garage would be served by its own small well. Domestic water demand at 55% utilization is projected at 9.9 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, seven acres of storage ponds (at an average depth of six feet) would be required. Storage could obtained by installing steel tanks or lining the natural basins the Moraines area, creating ponds. Projected water demand for snowmaking is 41.4 acre-feet per year.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
PYRAMID STATION
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SOLITUDE FLATS
JUDGE'S BENCH
NORTH FACE
MORAINES
MAMMOTH ROCK
MOTOCROSS BASE LODGE
PARKING
SHERWIN CREEK
Lift & Run Analysis
ALTERNATIVE IV
MOTOCROSS BASE
GARAGE
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
0 500 1000 1500
SEPT. 15, 1988

ALTERNATIVE IV - LIFTS - MOTOCROSS BASE

	NUMBER	1	2	5	10											TOTALS	PERCENT
	TYPE	FG	FG	FG	FG												
LIFT	# PASS	3	3	2	2												
BASICS	CLASS	B	I/A	B/I	A												
	CAP/HR(m)	1.342	1.495	.895	1.140											4.872	
	S/F	1.15	.950	1.08	.90												
	CHAIR SEP	43.6	45.000	43.6	47.5												
	TRANS.CAP.	1.800															
	HORIZ (m)	5.280	7.850	3.300	6.450											22.880	
	VERT (m)	1.140	2.190	.650	2.030											6.010	
	LEN (m)	5.402	8.150	3.363	6.762											23.677	
DESIGN	VTF (mil)	1.530	3.274	.582	2.314											7.700	
	DEGREES	12.18	15.588	11.14	17.47												
	% SLOPE	22	27.898	20	31												
	DERATE	1	1.000	1	1												
	IN LINE	.224	.249	.149	.190											.812	23
	ON LIFT	.372	.543	.154	.285											1.354	38
CAPACITY	ON RUNS	.427	.516	.167	.256											1.366	39
ANALYSIS	ACTIVE	1.023	1.309	.470	.731											3.532	80
	INACTIVE	.256	.327	.118	.183											.883	20
	MAX CAP	1.278	1.636	.588	.914											4.416	
	OLF															.416	9
	SAOT															4.000	
	BEGIN	.307														.307	9
	NOVICE	.716		.235												.951	27
ACTIVE	NOV/INT		.262	.141												.403	11
DISTRIBUTION	INTERMED		.393	.094												.487	14
ANALYSIS	INT/ADV		.393													.393	11
	ADVANCED		.261		.365											.627	18
	EXPERT				.366											.366	10

ALTERNATIVE IV - TRAILS - MOTOCROSS BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
e	46.4	B/E	5	1.00	470	.906	426	16	27	165	7026	4300	1.6	57
h	206.2	BEG	1	1.00	1023	.906	927	18	51	110	20390	8700	2.3	25
j	418.4	INT	2	1.00	1309	.906	1186	12	99	130	33115	7050	4.7	24
m	215.5	ADV	10	1.00	731	.906	662	8	83	140	25758	7400	3.5	38
TOTAL	886.5						3201	12.3	260	136	16.3 miles	7191	12	29

ALTERNATIVE IV - UTILIZATION - MOTOCROSS BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	SAOT	SEASON	20% UTIL	40% UTIL	60% UTIL
e	5	426	107	1.00	533	87	9269	18539	27808
h	1	927	232	1.00	1159	135	31287	62574	93861
j	2	1186	296	1.00	1482	175	51878	103755	155633
m	10	662	166	1.00	828	150	24843	49685	74528
TOTALS					4002	150	117276	234553	351829

Estimated annual irrigation demand for revegetation is 70.3 acre-feet per year. Irrigation would continue until ground cover is well established and able to maintain itself without supplemental water. This is anticipated to occur by the fourth year (the second year after build-out).

The second Motocross well would supply water to irrigation/snowmaking storage facilities. This well appears to be a potentially significant water resource, and the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Motocross Base would come from nearby irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H.

Sewer Sewer facilities are required at Motocross Base, Canyon Lodge, and the maintenance garage. Canyon Lodge would connect with Motocross Base, which in turn would connect with the existing lines at Sherwin Creek Campground, which are presently used only in summer. The garage would connect with the existing Sherwin Creek Campground line. Wastewater output is estimated at 20,925 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 10,837 kilowatts per year, with another 177 kw needed in the event of snowmaking. Underground electrical and telephone lines would follow Sherwin Creek Road down to the town's existing systems.

Estimated annual diesel requirement is 16,500 gallons. Fuel oil would be transported to the site by truck.

Solid waste would be transported to Motocross Base by ski lift, then removed from the site by truck.

Development of active and passive solar space heating is possible due to the moderate solar albedo potential of this alternative.

VISUAL IMPACT

The lift configuration of this alternative affects the Motocross, Solitude Canyon, Solitude Bowls and Pyramid Peak, and involves four of the 12 seen visual regions of the site. The visual impact is similar to Alternatives II, III, V, VI, and VII as seen from US 395. As viewed from the community, this alternative has the least impact. A site-specific visual analysis would be completed during the design development and enviromental analysis phases of the project, and the findings of that analysis would be used in the design process.

WILDLIFE

Lifts 1, 2, and 5, numerous ski runs, Motocross Baselodge, and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. These facilities would be closed to skiers during both staging and migration.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possible. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

A system to monitor spring and fall migration would developed, along with a closure plan.

TRANSPORTATION

An 8.22-acre parking lot would serve 960 autos and 15 buses. Eight shuttle buses would be used during peak hours to transport skiers between Motocross Base and the town.

2.52 miles of access road would be constructed, including paving Sherwin Creek Road up to the base. One-half mile of the road would need to be reconstructed, due to excessive grades. There is no walk-in access.

The ski area maintenance garage is located on a small spur road off Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in two phases. Phase 1 includes lifts 1 and 2, bringing the capacity to 2,640. Phase 2 adds lifts 5 and 10, increasing the capacity to 4,000.

CULTURAL RESOURCES

This alternative should not conflict with any of the nine identified archaeological sites in the Sherwin area. Identified sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative IV are estimated at $20.22 million, or $5,056 per SAOT. Gross annual revenues are $8.35 million, with annual operating costs totalling $6.42 million and a 1.8% return on equity. 160 employees would be needed to operate the mountain.

PROS

The advantages of Alternative IV are largely a result of its location behind Horn Ridge in Solitude Canyon. This siting greatly reduces the visual and noise impacts, which are the lowest of any alternative.

This alternative also has the fewest lifts, the least need for snowmaking and snowmaking water storage, and the lowest amount of disturbance. Average trail length exceeds that of other plans.

The construction sequence makes it possible to take immediate advantage of the excellent ski terrain in Solitude East Bowl and on Pyramid Bench.

In the event of lift closures, skiers may return to the base area from any part of the mountain.

The location of the Motocross Base puts it in close proximity to potential water sources and existing sewer lines, reducing construction costs.

CONS

Spring skiing is unlikely under this alternative for two reasons. First, snowmelt in the lower elevations would make snowmaking a necessity in pods E and H, at a cost that could prove prohibitive to a ski area with a very limited capacity. Second, deer staging and migration would require closure of the mountain around mid-April during a normal snow year.

This alternative opens less skiable terrain than any other, and does not take advantage of many of the mountain's best slopes—including the North Face and Sherwin Bowl. The Mammoth Motocross and Sierra Meadows recreation facilities would be sacrificed in return for an alpine area that does not adequately answer the demands of the growing western U.S. ski market.

The distance from the Mammoth community also presents disadvantages. Road and utility construction costs (with the exception of sewer and water) would be very high, and the remoteness of the Motocross site makes skier walk-ins impossible. Economic viability is further eroded by the short season; high snowmaking costs; and the high environmental and capital cost of developing the Solitude Canyon basins into snowmaking storage ponds. These factors contribute to a cost-per-skier exceeding that of all other alternatives.

2 ALTERNATIVE V

Alternative V serves 8,000 skiers from the Motocross base area. Three detachable and six fixed-grip lifts provide access to trails in all areas of the mountain with the exception of Pyramid Bench, Horn Ridge and the lower reaches of the Moraines.

This alternative offers an 18/45/37 proportion between beginner, intermediate and advanced terrain. 30% of gross pod terrain would be utilized. Season length varies from 87 days in pods D, E and L to 175 days in pods A, B, C, I, J and K; the average season length for all pods is 132 days. At a 40% utilization rate, this alternative would accomodate 486,467 skiers annually.

LODGES

Motocross Base is the staging area for 6,000 skiers and day lodge for 3,500. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Canyon Lodge provides day lodge support for 4,000 skiers. Facilities at this location include food service, restrooms, lockers, and safety facilities.

Solitude Lodge is the day lodge for 500 skiers. Amenities include a small pre-prepared food facility, restrooms, and a viewdeck.

Fingers Station stages 2,000 skiers. Facilities include ticket sales and restrooms.

Sherwin Station and **Pyramid Station** house lift terminal equipment.

LIFTS

1 A detachable lift that connects Motocross Base with Canyon Lodge and serves the beginners' runs in Solitude Flats. It is the first leg of a two-chair transit chain to the top of the mountain.

2 The second leg of the transportation link connects Canyon Lodge with Pyramid Station. This detachable lift serves the beginning runs on Pyramid Bench and the intermediate runs in East Bowl, and provides downloading for beginners on Pyramid Bench.

3a Connects Fingers Station to Sherwin Station, on the Judge's Bench. In addition to serving the intermediate runs below the bench, the detachable lift provides transit to the North Face (via Chair 4) and Solitude Canyon (via Chairs 3b and 7).

3b Continuing from the Judge's Bench to Solitude Lodge, this detachable lift takes skiers to intermediate runs in Sherwin Bowl, and provides a transit connection into Solitude Canyon.

4 A short fixed-grip chair between the Judge's Bench and Fingers Peak serving advanced runs in the western end.

5 A short fixed-grip chair ascending from Motocross Base up a draw to the southwest, giving access to intermediate runs.

6 A short fixed-grip beginner's lift in the Moraines.

7 Connecting Canyon Lodge with Solitude Lodge, this fixed-grip chair serves intermediate and advanced runs in Solitude West Bowl and provides access to the intermediate slopes in Sherwin Bowl.

8 A fixed-grip chair serving beginner and novice trails below Pyramid Station.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

8,000 SAOT x 90%	=	7,200
Less: Ski School		- 100
Lifts 5 & 6		- 809
Total Requirement		6,292

The main transit lifts are:

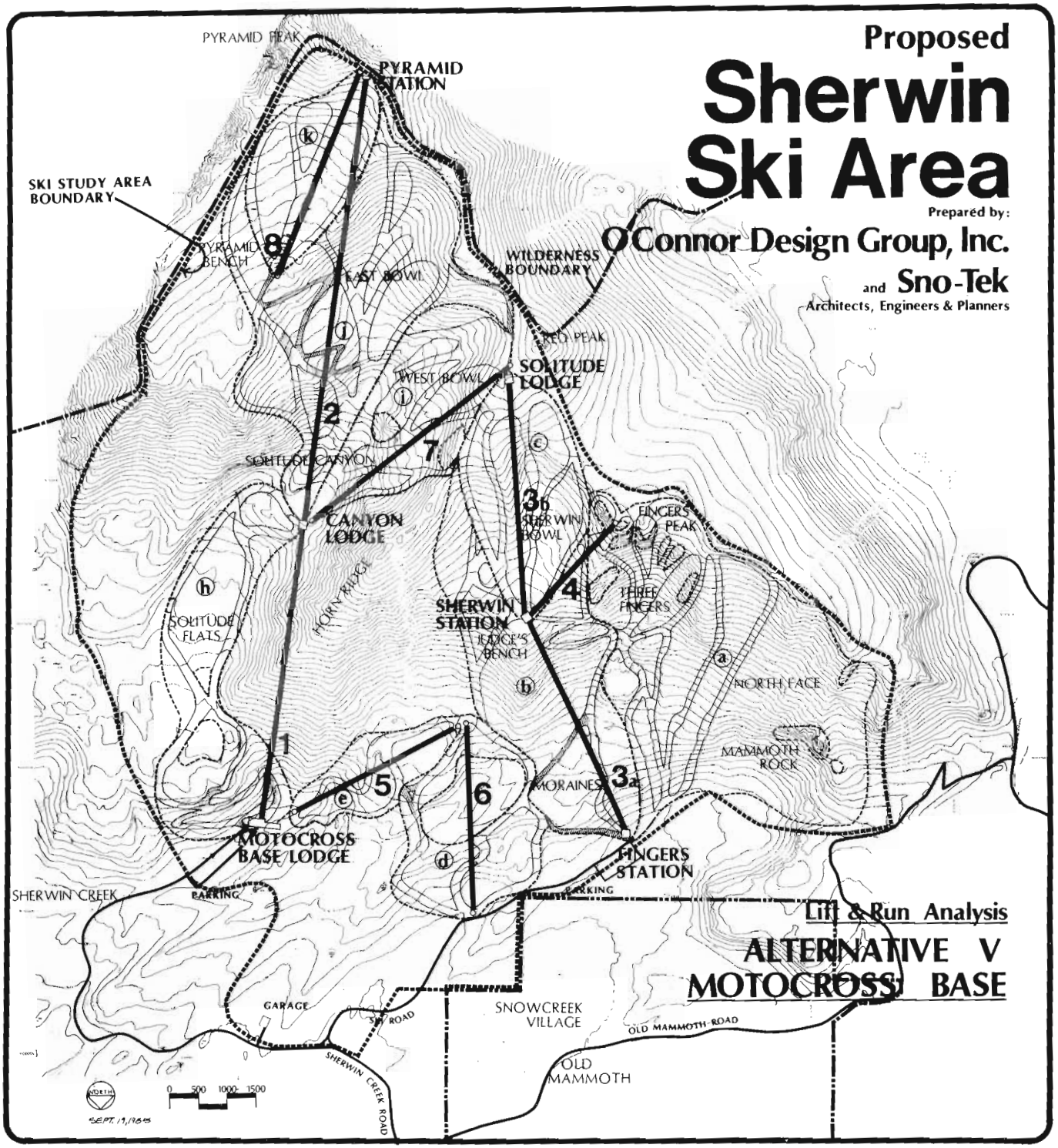
1 Total 2-hour capacity: 5,600. Less 1,908 internal pod B skiers, the net uphill capacity is 3,692.

3a Total 2-hour capacity: 4,800. Less 1,908 internal pod A skiers, this yields a net uphill capacity of 2,892.

Transit capacity at peak is 3,692 plus 2,892, which totals 6,584 skiers.

AVALANCHE

Under Alternative V, the entire mountain would be made available for skiing and would require avalanche control. Control efforts would require 12 personnel, five avalaunchers, and an overnight facility at Solitude Lodge.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
PYRAMID STATION
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
SOLITUDE LODGE
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
SOLITUDE FLATS
HORN RIDGE
SHERWIN STATION
LEDGE'S BENCH
NORTH FACE
MAMMOTH ROCK
MORAINES
MOTOCROSS BASE LODGE
FINGERS STATION
PARKING
SHERWIN CREEK
Lift & Run Analysis
ALTERNATIVE V
MOTOCROSS BASE
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
NORTH
0 500 1000 1500
SEPT. 19, 1985

ALTERNATIVE V - LIFTS - MOTOCROSS BASE

	NUMBER	1	2	3a	3b	4	5	6	7	8						TOTALS	PERCENT
	TYPE	DET	DET	DET	DET	FG	FG	FG	FG	FG							
LIFT	# PASS	4	3	3	3	3	4	2	3	2							
BASICS	CLASS	B/N/I	I/A	A	I/A	I/A	N/NI	B/N	I/IA	N/NI							
	CAP/HR(m)	2.400	2.250	2.250	2.250	1.710	1.566	.895	1.495	.895						15.711	
	S/F	1.15	.95	.90	1.00	.95	1.15	1.15	1.00	1.15							
	CHAIR SEP	47.5	45	47.5	47.5	45	43.6	43.6	45	43.6							
	TRANS.CAP	2.800		2.400													
	HORIZ (m)	5.180	7.850	4.200	4.200	2.200	3.300	3.300	4.400	3.800						38.430	
	VERT (m)	1.140	2.190	1.430	1.130	.870	.650	.700	1.420	.770						10.300	
	LEN (m)	5.304	8.150	4.437	4.349	2.366	3.363	3.373	4.623	3.877						39.843	
DESIGN	VTF (mil)	2.736	4.928	3.217	2.542	1.488	1.018	.626	2.123	.689						19.368	
	DEGREES	12.41	15.59	18.80	15.06	21.58	11.14	11.98	17.89	11.45							
	% SLOPE	22	28	34	27	40	20	21	32	20							
	DERATE	.8	1	1	1	1	.6	1	1	1							
	IN LINE	.320	.375	.375	.375	.285	.157	.149	.249	.149						2.434	33
	ON LIFT	.357	.543	.280	.275	.158	.185	.155	.308	.178						2.439	33
CAPACITY	ON RUNS	.411	.516	.252	.275	.150	.213	.178	.308	.205						2.507	34
ANALYSIS	ACTIVE	1.088	1.434	.907	.924	.593	.555	.482	.866	.532						7.381	80
	INACTIVE	.272	.359	.227	.231	.148	.139	.120	.216	.133						1.845	20
	MAX CAP	1.360	1.793	1.134	1.155	.741	.693	.602	1.082	.664						9.226	
	OLF															1.226	13
	SAOT															8.000	
	BEGIN	.326						.241								.567	8
	NOVICE	.762					.277	.241		.266						1.546	21
ACTIVE	NOV/INT		.287		.231		.166			.266						.950	13
DISTRIBUTION	INTERMED		.430		.462	.118	.111		.433							1.554	21
ANALYSIS	INT/ADV		.430	.302	.231	.178			.433							1.574	21
	ADVANCED		.287	.302		.178										.767	10
	EXPERT			.303		.119										.422	6

ALTERNATIVE V - TRAILS - MOTOCROSS BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	TRAIL LENGTH	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	419.4	ADV	3a	.80	907	.866								
			4	.70	593	.866	988	7	141	155	39660	7400	5.4	.34
b	241.3	ADV	3a	.20	907	.866								
			3b	.05	924	.866	197	7	28	110	11150	7400	1.5	.12
c	153.5	INT	3b	.95	924	.866								
			4	.30	593	.866	914	14	65	165	17240	4400	3.9	.43
d	92.0	BEG	6	1.00	482	.866	417	18	23	100	10101	4700	2.1	.25
e	46.4	BEG	5	1.00	555	.866	481	16	30	150	8723	4300	2.0	.65
h	206.2	BEG	1	1.00	1088	.866	942	20	47	120	17101	8700	2.0	.23
i	151.0	INT	7	1.00	866	.866	750	14	54	120	19445	5900	3.3	.35
j	301.9	INT	2	1.00	1434	.866	1242	12	103	130	34676	7050	4.9	.34
k	116.5	BEG	8	1.00	532	.866	461	17	27	120	9838	3700	2.7	.23
TOTAL	1728.2		8				6392	12	519		31.8 mi.	6041	27.8	.30

ALTERNATIVE V - UTILIZATION - MOTOCROSS BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	PAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a	3a	786	197	.80	787	150	23596	47193	70789	64890
	4	514	128	.70	450	150	13491	26983	40474	37101
b	3a	786	197	.20	197	150	5899	11798	17697	16222
	3b	801	200	.05	50	175	1752	3505	5257	4819
c	3b	801	200	.95	951	175	33287	66574	99861	91539
	4	514	197	.30	213	150	6399	12798	19197	17597
d	6	418	104	1.00	522	87	9082	18163	27245	24975
e	5	481	121	1.00	602	87	10470	20939	31409	28791
h	1	943	236	1.00	1179	135	31836	63672	95509	87550
i	7	751	187	1.00	938	175	32833	65667	98500	90292
j	2	1243	311	1.00	1555	175	54409	108817	163226	149624
k	8	461	115	1.00	577	175	20179	40359	60538	55493
TOTALS					8019	175	243234	486467	729701	668893

SOILS

During the three phases of construction, an estimated 132 acres will be disturbed. Of these, 83 acres will be revegetated with shrubs and meadow grasses.

WATER

Two wells would be located near the Motocross, with a third near Canyon Lodge.

Domestic Motocross Base is expected to obtain water from one of the two wells, with a domestic water storage tank located nearby. Canyon Lodge would be served by its nearby well, with a similar storage tank. Solitude Lodge would be also supplied by the Canyon Lodge well. Fingers Station would require a pipeline from the Motocross well, or connect with MCWD sources on Old Mammoth Road. The maintenance garage would be served by its own small well. Domestic water demand at 55% utilization is projected at 20.52 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 14 acres of storage ponds (at an average depth of six feet) would be required. Storage could obtained by installing steel tanks or lining the natural basins the Moraines area, creating ponds.The second Motocross well is expected to supply water to irrigation/snowmaking storage facilities. Projected water demand for snowmaking is 81.3 acre-feet per year.

Estimated annual irrigation demand for revegetation is 89.9 acre-feet per year. Irrigation would continue until ground cover is well established and able to maintain itself without supplemental water. This is anticipated to occur by the fifth year (the second year after build-out). Since the Motocross well appears to be a potentially significant water resource, the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Motocross Base would come from nearby irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H. At Solitude Lodge, a sprinkler system would draw on the domestic supply.

Sewer Sewer facilities are required at Motocross Base, Canyon Lodge, Solitude Lodge, Fingers Station and the maintenance garage. Solitude Lodge would connect with Canyon Lodge, which would connect with Motocross Base. From the base, the line would continue to connect with existing lines at Sherwin Creek Campground, which are presently used only in summer.

Fingers Station would be connected with existing lines at Old Mammoth Road. This line has a high cost, since it must run all the way to Old Mammoth Road for one small facility alone. The maintenance garage would connect with existing lines at Sherwin Creek Road. Wastewater output is estimated at 36,790 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 27,456 kilowatts per year, with another 348 kw needed in the event of snowmaking. Underground electrical and telephone lines would follow Sherwin Creek Road down to the town's exisiting systems.

Estimated annual fuel oil consumption is estimated at 29,040 gallons. Fuel oil would be transported from the site by truck.

Solid waste would be transported to Motocross Base on ski lifts, then removed from the site by truck.

Development of active and passive solar space heating would be feasible due to the high solar albedo potential of this alternative.

VISUAL IMPACT

This alternative has a moderate overall visual impact, similar to that of Alternatives I, II and VII. From Mammoth Lakes, the runs on the North Face would be visible, though mitigation is possible by designing them to resemble the numerous avalanche and water drainage paths now present on the mountain. From US 395, no trails or structures would be visible.

WILDLIFE

Lifts 1, 2, 3a, 5, 6, and 7, numerous ski runs, Motocross Baselodge, Fingers Station, and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. These facilities would be closed to skiers during migration, and the presence of ski area personnel would be reduced to a necessary minimum. The presence of the facilities themselves, however, would have some impact. During spring staging, Lifts 1, 5, and 6 would be closed. The rest of the lifts and their associated trails could be skied until migration begins.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possbile. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

Spring skiing could probably be continued in the upper elevations while deer are congregating in the staging area. The Spring Burnoff & Wind Scour map (page 86) and the Staging Area map (page 102) indicate that skiing would necessarily avoid the staging area. The operation of Motocross Base would have a negative impact on the deer, since it located well within the staging area. Both migration routes would be affected once the deer began moving out of the staging area. Therefore, skiing activities would cease at that time.

A system to monitor spring and fall migration would developed, along with a closure plan.

CONSTRUCTION

Construction would take place in three phases. Phase 1 includes lifts 1 and 2, bringing the capacity to 2,735. Phase 2 adds lifts 3a, 3b, 5 and 7, increasing the capacity to 6,250. The final phase, lifts 4, 6 and 8, add 1,740 skiers for a final total of 8,000 SAOT.

TRANSPORTATION

Two parking lots, one at Motocross Base and one at Fingers Station, will accommodate 1,930 cars and 30 buses on 16.54 acres. Sixteen shuttle buses would be used during peak hours to transport skiers between the ski area and the town.

3.65 miles of new access road would be built. Sherwin Creek Road would require paving from the Old Mammoth turnoff to the Motocross Base Lodge. One-half mile of the road will be reconstructed to overcome excessive grades. A second new road connecting Sherwin Creek Road with Fingers Station is also needed. An estimated 500 skiers would be able to walk to Fingers Station from Snowcreek Village.

The ski area maintenance garage is located near the northern edge of the site, about 1200' east of the Ski Road intersection on Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CULTURAL RESOURCES

This alternative should not conflict with any of the nine identified archaeological sites in the Sherwin area. Identified cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative V are estimated at $33.80 million, or $4,225 per SAOT. Gross annual revenues are $14.85 million, with annual operating costs totalling $11.02 million and a 6.3% return on equity. 326 employees would be needed to operate the mountain.

PROS

Under Alternative V, the most desirable areas of the mountain are available to skiers, including the North Face, Solitude Canyon, Pyramid Peak, and the Moraines.

During spring and fall deer migration closures, good skiing would continue to be available in the western portion of the area, increasing skier days per season.

The construction sequence makes it possible to take immediate advantage of the excellent ski terrain in Solitude East Bowl and on Pyramid Bench.

Access to most areas of the mountain can be achieved by more than one lift, a redundancy that facilitiates evacuation if high winds, lift closure, or other emergency demands it. Ski-back trails are provided for Chair 8, the only pod where no back-up lift exists.

The 8,000 SAOT capacity is consistent with the community's planned skier capacity, and contributes significantly to fulfilling the expected market demand. The greater potential economic viability (as compared with alternatives accommodating 4,000 skiers) should result in a higher economic return to the Mammoth Lakes region.

CONS

The distance from the Mammoth community presents disadvantages. Road and utility construction costs (with the exception of sewer and water) are very high, due to the second road leading to Fingers Station and the water connections needed in that location. The greater number of motorists passing through the deer staging area on Sherwin Creek Road would potentially result in a high number of road kills.

The remoteness of the Motocross Base reduces the opportunity for summer gondola rides. The location has a severe impact on competing recreational uses, including the Mammoth Motocross and Sierra Meadows facilities; and on deer staging, which could be mitigated only by closing the base lodge and a large proportion of the area's lifts and trails.

2 ALTERNATIVE VI

Alternative VI serves 12,000 skiers from the Motocross base area. Four detachable lifts and nine fixed grip lifts provide access to trails in all areas of the mountain. This alternative offers a 22/27/51 proportion between beginner, intermediate and advanced terrain. 41% of the gross pod terrain would be utilized.

Season length varies from 87 days in pods D, E and L to 175 days in pods A, B, C, I, J and K; the average season length for all pods is 148 days. At a 40% utilization rate, this alternative would accommodate 711,023 skiers annually.

LODGES

Motocross Base is the staging area for 8,500 skiers and day lodge for 3,000. Among the facilities planned at this location are ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative offices, ski school, rental and repair shops, and a retail shop.

Fingers Lodge stages 1,000 skiers and provides day lodge services for 4,000. Facilities here are similar to those for the Motocross Lodge.

Canyon Lodge provides day lodge support for 4,000 skiers. Facilities at this location include food service, restrooms, lockers, and safety facilities.

Solitude Lodge is the day lodge for 1,000 skiers. Amenities include a small pre-prepared food facility, restrooms, and a viewdeck.

Moraine Station is a shuttle bus drop-off point staging 3,500 skiers. Restrooms and ticket sales are located here.

Sherwin Station and **Pyramid Station** house lift terminal equipment.

LIFTS

1 A detachable lift that connects Motocross Base with Canyon Lodge and serves the beginners' runs in Solitude Flats. It is the first leg of a two-lift transit chain to the top of the mountain.

2 The second leg of the transportation link connects Canyon Lodge with Pyramid Station. This detachable lift serves the beginning runs on Pyramid Bench and the intermediate runs in East Bowl, and provides downloading for beginners on Pyramid Bench.

3a Connects Fingers Station to Sherwin Station, which is located on the Judge's Bench. In addition to serving the intermediate runs below the bench, the detachable lift provides transit to the North Face (via Lift 4) and Solitude Canyon (via Lifts 3b and 7).

3b Continuing from the Judge's Bench to Solitude Lodge, this detachable lift takes skiers to intermediate runs in Sherwin Bowl, and provides a transit connection into Solitude Canyon.

4 A short fixed-grip lift between the Judge's Bench and Fingers Peak, serving the advanced runs in the western end.

5 A short fixed-grip lift ascending from Motocross Base up a draw to the southwest, giving access to intermediate runs.

6 A short fixed-grip beginner's lift in the Moraines.

7 Connecting Canyon Lodge with Solitude Lodge, this fixed-grip lift serves intermediate and advanced runs in Solitude West Bowl and provides access to the intermediate slopes in Sherwin Bowl.

8 A fixed-grip lift serving beginner and novice trails below Pyramid Station.

9 The advanced trails on far western portion of the North Face are served by this fixed-grip lift that passes just east of Mammoth Rock.

10 A fixed-grip lift running from Solitude Flats to Pyramid Bench, serving advanced and expert trails.

11 A fixed-grip lift connecting Moraine Station to a knob in the Moraines. It serves the beginners' runs in pod L and gives access to lifts 5 and 6.

12 A fixed-grip lift ascending from Solitude Flats to Canyon Lodge, serving beginners' trails on the flats.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

12,000 SAOT x 90%	=	10,800
Less: Ski School		- 280
Lifts 5, 6 & 11		- 2,282
Total Requirement		8,238


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
PYRAMID PEAK
PYRAMID STATION
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
SOLITUDE LODGE
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SHERWIN STATION
LODGE'S BENCH
SOLITUDE FLATS
NORTH FACE
MAMMOTH ROCK
MORAINES
MOTOCROSS BASE LODGE
PARKING
FINGERS LODGE
SHERWIN CREEK
MORAINE STATION
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
0 500 1000 1500
SEPT. 1, 1983
Lift & Run Analysis
ALTERNATIVE VI
MOTOCROSS BASE

ALTERNATIVE VI - LIFTS - MOTOCROSS BASE

	NUMBER	1	2	3a	3b	4	5	6	7	8	9	10	11	12		TOTALS	PERCENT
	TYPE	DET	DET	DET	DET	FG	FG	FG	FG	FG	FG	FG	FG	FG			
LIFT	# PASS	4	4	3	3	4	4	2	4	2	3	2	3	2			
BASICS	CLASS	B	I/A	A	I/A	I/A	I/B	B	I	B	A	A	B	B			
	CAP/HR(m)	2.400	2.400	2.250	2.250	2.104	1.566	.895	1.851	.895	1.710	1.140	1.342	.895		21.698	
	S/F	1.15	.95	.90	1.00	.95	1.08	1.15	1.00	1.15	.90	.90	1.15	1.15			
	CHAIR SEP	47.5	47.5	47.5	47.5	45	43.6	43.6	45	43.6	47.5	47.5	43.6				
	TRANS.CAP.	2.800		2.800													
	HORIZ (m)	5.180	7.850	4.200	4.200	2.200	3.300	3.300	4.400	3.800	3.850	6.450	5.280	3.800		57.810	
	VERT (m)	1.140	2.190	1.430	1.130	.870	.650	.700	1.420	.770	2.000	2.030	.700	.630		15.660	
	LEN (m)	5.304	8.150	4.437	4.349	2.366	3.363	3.373	4.623	3.877	4.338	6.762	5.326	3.852		60.122	
DESIGN	VTF (mil)	2.736	5.256	3.217	2.542	1.830	1.018	.626	2.628	.689	3.420	2.314	.939	.564		27.782	
	DEGREES	12.41	15.59	18.80	15.06	21.58	11.14	11.98	17.89	11.45	27.45	17.47	7.55	9.41			
	% SLOPE	22	28	34	27	40	20	21	32	20	52	31	13	17			
	DERATE	.54	1	1	1	1	.6	1	1	1	1	.828	1	1			
	IN LINE	.216	.400	.375	.375	.351	.157	.149	.308	.149	.285	.157	.224	.149		3.295	31
	ON LIFT	.241	.686	.280	.275	.210	.185	.155	.411	.178	.274	.236	.366	.177		3.674	34
CAPACITY	ON RUNS	.277	.652	.252	.275	.200	.200	.178	.411	.205	.247	.212	.421	.203		3.733	35
ANALYSIS	ACTIVE	.735	1.738	.907	.924	.761	.542	.482	1.130	.532	.806	.605	1.012	.529		10.702	80
	INACTIVE	.184	.435	.227	.231	.190	.135	.120	.283	.133	.201	.151	.253	.132		2.676	20
	MAX CAP	.918	2.173	1.134	1.155	.951	.677	.602	1.413	.664	1.007	.757	1.265	.661		13.378	
	OLF															1.378	10
	SAOT															12.000	
	BEGINNER	.220												.265		.485	4
	NOVICE	.514					.271	.482		.266				.264		1.797	18
ACTIVE	NOV/INT		.348		.231		.163			.266						1.007	9
DISTRIBUTION	INTERMED		.521		.462	.152	.108		.565		.161					1.971	18
ANALYSIS	INT/ADV		.521	.302	.231	.228			.565		.242					2.090	19
	ADVANCED		.348	.302		.228					.242	.151	.506			1.777	17
	EXPERT			.303		.153					.161	.454	.506			1.577	15

ALTERNATIVE VI - TRAILS - MOTOCROSS BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS/ ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	237.6	ADV	3a	.80	907	.868								
			4	.70	761	.868	1092	7	156	160	42479	7400	5.7	.66
b	241.3	ADV	3a	.20	907	.868								
			3b	.05	924	.868	198	7	28	110	11176	7400	1.5	.12
c	153.5	INT	3b	.95	924	.868								
			4	.30	761	.868	960	14	69	165	18105	4400	4.1	.45
d	92.0	BEG	6	1.00	482	.868	418	18	23	100	10125	4700	2.2	.25
e	46.4	BEG	5	1.00	542	.868	470	16	29	150	8539	4300	2.0	.63
h	106.2	BEG	1	1.00	735	.868								
			12	1.00	529	.868	1097	18	61	135	19667	6550	3.0	.57
i	151.0	INT	7	1.00	1130	.868	981	14	70	130	23475	5900	4.0	.46
j	301.9	INT	2	1.00	1738	.868	1509	12	126	130	42124	7050	6.0	.42
k	116.5	BEG	8	1.00	532	.868	462	17	27	120	9860	3700	2.7	.23
l	60.2	BEG	11	1.00	1012	.868	878	20	44	165	11595	3400	3.4	.73
m	215.5	ADV	10	1.00	605	.868	525	8	66	110	25994	7400	3.5	.30
n	181.8	ADV	9	1.00	806	.868	700	8	87	140	27210	4800	5.7	.48
TOTAL	1903.9		12				9290.2	11.8	786.4		47.4 mi.	5729	43.7	.41

ALTERNATIVE VI - UTILIZATION - MOTOCROSS BASE

POD	LIFTS	ACTIVE	INACTIVE	% UTIL	SAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a	3a	814	204	.80	814	150	24413	48826	73238	67135
	4	683	170	.70	597	175	20900	41799	62699	57474
b	3a	814	204	.20	204	150	6108	12216	18324	16797
	3b	829	207	.05	52	175	1813	3626	5439	4986
c	3b	829	207	.95	984	175	34447	68894	103341	94729
	4	683	170	.30	256	175	8956	17913	26869	24630
					0					
d	6	432	108	1.00	540	87	9396	18792	28188	25839
e	5	486	121	1.00	607	87	10566	21133	31699	29058
h	1	659	165	1.00	824	135	22257	44515	66772	61207
	12	475	118	1.00	593	135	16009	32018	48026	44024
i	7	1014	254	1.00	1267	175	44361	88722	133083	121993
j	2	1559	390	1.00	1949	175	68221	136443	204664	187609
k	8	477	119	1.00	597	175	20878	41755	62633	57414
l	11	908	227	1.00	1135	87	19744	39488	59232	54296
m	10	543	135	1.00	678	150	20344	40688	61032	55946
n	9	723	180	1.00	903	150	27098	54197	81295	74521
TOTALS					12000	148	355512	711023	1066535	977657

The main transit lifts are:

1 Total two-hour capacity: 5,600 skiers. This will be a transit lift only during peak hours.

3a Total two-hour capacity: 5,600 skiers. Less 2,250 internal pod A skiers, the peak-hour transit capacity is 3,350.

Actual peak-hour uphill transit capacity is 5,600 plus 3,350, or 8,950.

AVALANCHE

Under Alternative VI, the entire mountain would be made available for skiing and would require avalanche control. Control efforts would require 12 personnel, five avalaunchers, and an overnight facility at Solitude Lodge.

SOILS

During the four phases of construction, an estimated 201 acres will be disturbed. Of these, 141 acres will be revegetated with shrubs and meadow grasses.

WATER

Two wells would be located near the Motocross, with two more near Canyon Lodge and one at Fingers Lodge.

Domestic Motocross Base and Moraine Station are expected to obtain water from one of the two local wells, with a domestic water storage tank located nearby. Canyon Lodge would be served by one of its nearby wells, with a similar storage tank. Solitude Lodge would also connect to the Canyon supply. Fingers Lodge would either have its own well, or connect with MCWD sources on Old Mammoth Road. The maintenance garage would be served by its own small well. Domestic water demand at 55% utilization is projected at 30 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 25 acres of storage ponds (at an average depth of six feet) would be required. Storage could obtained by installing steel tanks or lining the natural basins the Moraines and Solitude Canyon, creating ponds. The second Motocross well would supply water to irrigation/snowmaking storage facilities. Projected water demand for snowmaking is 147.3 acre-feet per year.

Estimated annual irrigation demand for revegetation is 137.8 acre-feet per year. Irrigation would continue until ground cover is well established and able to maintain itself without supplemental water. This is anticipated to occur by the sixth year (the second year after build-out). Since the Motocross well appears to be a potentially significant water resource, the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Motocross Base and Fingers Lodge would come from nearby irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H. At Solitude Lodge, a sprinkler system would draw on the domestic supply.

Sewer Sewer facilities are required at Motocross Base, Canyon Lodge, Solitude Lodge, Fingers Lodge, Moraine Station and the maintenance garage. Solitude Lodge would connect with Canyon Lodge, which would connect with Motocross Base. Moraine Station would also be connected with Motocross Base. From the base, the line would continue to connect with existing lines at Sherwin Creek Campground, which are presently used only in summer.

Fingers Lodge would be connected with existing lines at Old Mammoth Road. The maintenance garage would connect with existing lines at Sherwin Creek Road. Wastewater output is estimated at 62,010 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 38,931 kilowatts per year, with another 630 kw needed in the event of snowmaking. Underground electrical and telephone lines for Motocross Base would follow Sherwin Creek Road down to the town's existing facilities. For Fingers Base, these lines would be connected via Snowcreek Village.

Estimated annual fuel oil consumption is estimated at 48,840 gallons. Fuel oil would be transported to the site by truck.

Solid waste would be transported to Motocross Base and Fingers Lodge by ski lift, then transported from the site by truck.

Active and passive solar space heating can readily be developed due to the high solar albedo potential of this alternative.

VISUAL IMPACT

This alternative is similar to all of the 8,000 and 12,000 SAOT alternatives, involving all 12 seen visual regions of the site. The high level of development under this alternative has a correspondingly high visual impact. The proposed lift to the top of Horn Ridge may not meet the Visual Quality Objective of Partial Retention, even with mitigation. A site-specific visual analysis would be complete during the design development and environmmental analysis phases of the project, and the findings of that analysis be used in the design process.

WILDLIFE

Lifts 1, 2, 3a, 5, 6, 7, 9, 11 and 12, numerous ski runs, Motocross Base, Fingers Lodge and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. These facilities would be closed to skiers during migration, and the presence of ski area personnel would be reduced to a necessary minimum. The presence of the facilities themselves, however, would have some impact. During spring staging, Lifts 1, 5, 6, and 11 would be closed. The rest of the lifts and their associated trails could be skied until migration begins.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possible. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

Spring skiing could probably continue in the upper elevations while the deer are congregating in the staging area. The Spring Burnoff & Wind Scour Map (page 86) and the Staging Area Map (page 102) indicate that skiing would necessarily avoid the staging area. The operation of Motocross Base would have a negative impact on the deer staging, since it is located well within the staging area. Both migration routes would be affected once the deer began moving out of the staging area. Therefore, skiing activities would cease at that time.

A system to monitor spring and fall migrations would be developed, along with a closure plan.

TRANSPORTATION

Two parking lots, one at Motocross Base and one at Fingers Lodge, accommodate 2,880 cars and 45 buses on 24.7 acres. Twenty-four transit buses would connect the base lodge, Moraine Station, and Fingers Lodge.

Road construction requirements include paving Sherwin Creek Road from the Old Mammoth turnoff to the Motocross Base Lodge. One-half mile of the road would reconstructed to overcome excessive grades. A second new road connecting Sherwin Creek Road with Fingers Station and shuttle road leading to Moraine Station are also needed. An estimated 500 skiers could walk to Fingers Lodge from Snowcreek Village.

The ski area maintenance garage is located on a small spur road off the Moraine Station shuttle road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in four phases. Phase 1 includes lifts 1 and 2, bringing the capacity to 2,773. Phase 2 adds lifts 3a, 3b, 5 and 7, increasing the capacity by 3,928. Phase 3 adds lifts 4, 6 and 8, and

1,989 skiers. The final phase, lifts 9, 10, 11 and 12, adds 3,310 skiers for a final total of 12,000 SAOT.

CULTURAL RESOURCES

This alternative should not conflict with any of the nine identified archaeological sites within the Sherwin area. Cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.

ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative VI are estimated at $46.65 million, or $3,888 per SAOT. Gross annual revenues are $27.07 million, with annual operating costs totalling $17.17 million and a 21.9% return on equity. 490 employees would be needed to operate the mountain.

PROS

During spring deer migration closures, good skiing would continue to be available in the western portion of the area, increasing skier days per season to the highest level of any alternative considered. All skier staging and base lodge functions could be taken over at Fingers Lodge.

The construction sequence makes it possible to take immediate advantage of the excellent ski terrain in Solitude East Bowl and on Pyramid Bench. The alternative offers the highest proportion of advanced terrain.

This alternative fully utilizes the mountain's skiing potential, creating a ski area that would most fully respond to the market demand. This results in the lowest cost per skier of any alternative.

CONS

This alternative carries the highest unmitigable deer impact of any of the seven presented, since it uses the highest proportion of deer staging and migration terrain in addition to placing critical base facilities within the staging area.The high number of motorists on roads in the staging area would potentially result in a very high number of road kills.

Fingers Lodge is located in an ecologically sensitive meadow area. Placing a full base lodge facility with parking would create a high visual impact and have undesirable effects on the meadow environment.

The distance from the Mammoth community presents disadvantages. Road and utility construction costs are the highest of any alternative, due to the second road leading to Fingers Station, the shuttle road and station at Chair 11, and the water connections needed in that location. Snowplow and maintenance costs would be correspondingly high. Despite these costs, overall traffic circulation is poor.

Other high impacts include revegetation acreage, water demand, and parking acreage.

This alternative meets USFS goals to provide for recreational alpine skiing demand, since 12,000 SAOT has been determined as the maximum for the Sherwin area. However, 12,000 skiers, together with the projected 24,000 that Mammoth Mountain will be accommodating by 1987, total 36,000 skiers in the Mammoth Lakes area—4,000 in excess of the number specified by both the Monoplan and Town of Mammoth General Plan. In short, it would overload the town's planned capacity.

2 ALTERNATIVE VII

Alternative VII serves 8,000 skiers from a single base facility located immediately adjacent to Snowcreek Village, a private development on the northern boundary of the Sherwin area. Eleven lifts, including five high-capacity detachable lifts, five fixed grip lifts and one platter lift, provide access to about 2/3 of the area's skiable terrain, including the North Face, the Moraines, Sherwin Bowl, Solitude Canyon, and Pyramid Peak.

This alternative offers an 18/41/41 proportion between beginner, intermediate and advanced terrain. 27% of gross pod terrain would be utilized. Season length varies from 87 days in pods D, E and O to 175 days in pods B, C, I, J, and K; the average season length for all pods is 142 days. At a 40% utilization rate, this alternative would accommodate 456,303 skiers annually.

LODGES

Snowcreek Base differs significantly from its counterparts in Alternatives I, II, and III. Though still situated within Sherwin boundaries, it is positioned 1,000' closer to Snowcreek Village than the previous Snowcreek lodges. This change of location brings the village's shops, cafes, and skier services within walking distance of the skier staging area, and allows the lodge to be used during the summer as a summer and off-season convention center for the community. As a convention center, the building would accommodate groups of up to 2,000 people.

The lodge provides staging for the entire mountain and day lodge services for 3,000. Facilities include ticket sales, food service, restrooms, lockers, first aid and safety facilities, administrative office, ski school rental and repair shop, and a retail shop.

Solitude Lodge also differs from its correspondents in other alternatives. Other lodges in this area are located in a saddle well to the northeast of Red Peak at an elevation of 10,500'; under Alternative VII, the facility will be just below the northeast side of the peak (about 700' southwest of the other site) at an elevation of 10,660'. This change of location will require greater snow maintenance management than the saddle site, but will provide access to more terrain, particularly in Solitude West Bowl and Sherwin Bowl; and to better views.

Solitude will be the day lodge for 1,000 skiers. Facilities will include food service, sun decks, and restrooms. The dramatic Sierra views from this vantage point make it a possible setting for a quality all-year restaurant, and a logical terminus for scenic rides.

Canyon Lodge provides day lodge facilities for 4,000 skiers. Amenities will include food service, restrooms, lockers and safety facilities.

Sherwin Station and **Pyramid Station** house lift terminal equipment.

The ski school is located on the west side of Snowcreek Lodge, near Lift #2, which is a beginners' platter lift.

LIFTS

1 A detachable quad lift running from Fingers Station to Fingers Peak. This lift is located in a high avalanche hazard area, and will require special protection measures.

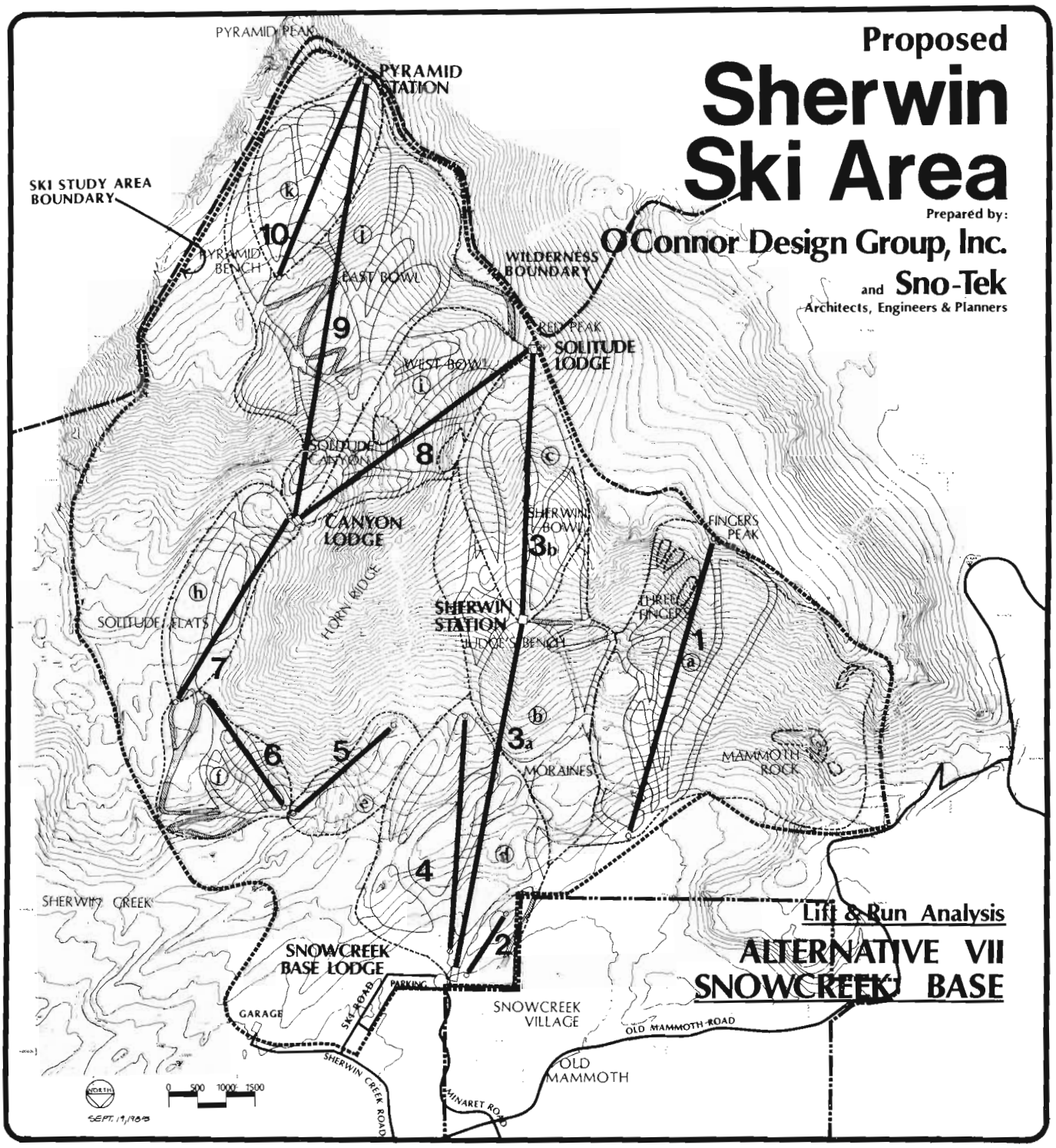
2 A beginners' platter lift running from the area southwest of Snowcreek Base to the top of a knob in the Moraines.

3 3a and 3b, both detachable quad lifts, serve as the major transportation lifts onto the mountain. 3a connects Snowcreek Base with the Judge's Bench, and provides access to the north face; 3b continues from the Judge's Bench to Solitude Lodge on Red Peak, and is the main lift into Sherwin Bowl and Solitude Canyon. In the summer months, it will be possible to replace the lifts with gondola cars for scenic rides terminating at Red Peak.

4 A fixed-grip lift, serving primarily beginners' trails. It also provides access to the North Face and trails in the Motocross area.

5 This fixed-grip lift runs from the Motocross area toward Snowcreek Base, serving the intermediate lifts in that area. Equipped with a backup diesel generator, it can be used as an exit lift in the event of electrical failure, high winds, or other emergency that mandates evacuation of Solitude Canyon.

6 A fixed-grip lift serving the intermediate runs above the Motocross.


Proposed
Sherwin Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
PYRAMID STATION
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
SOLITUDE LODGE
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
SHERWIN BOWL
FINGER'S PEAK
HORN RIDGE
SOLITUDE FLATS
SHERWIN STATION
JUDGE'S BENCH
THREE FINGERS
MORAINES
MAMMOTH ROCK
SHERWIN CREEK
SNOWCREEK BASE LODGE
PARKING
GARAGE
SKI ROAD
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
SHERWIN CREEK ROAD
MINARET ROAD
NORTH
0 500 1000 1500
SEPT. 19, 1983
Lift & Run Analysis
ALTERNATIVE VII
SNOWCREEK BASE

ALTERNATIVE VII - LIFTS - SNOWCREEK BASE

	NUMBER	1	2	3a	3b	4	5	6	7	8	9	10			TOTALS	PERCENT
	TYPE	DET	POM	DET	DET	FG	FG	FG	FG	DET	DET	FG				
LIFT	# PASS	3	1	4	4	4	4	3	3	3	3	2				
BASICS	CLASS	A	SS	A	I	B/N	B/I	I	B/N	I/A	I/A	N				
	CAP/HR(m)	2,250	.600	2,400	2,400	1,566	1,566	1,566	1,342	2,250	2,250	.895			19,085	
	S/F	.90	.9	.90	1.00	1.15	1.07	1.00	1.15	1.00	1.00	1.15				
	CHAIR SEP	47.5	43.6	47.5	47.5	43.6	43.6	43.6	43.6	47.5	47.5	43.6				
	TRANS.CAP.			2,800		1,851										
	HORIZ (m)	5,330	1,200	6,300	4,600	4,100	2,350	2,500	3,800	5,000	7,850	3,800			46,830	
	VERT (m)	2,200	.120	1,490	1,250	.700	.600	.580	.630	1,540	2,190	.770			12,070	
DESIGN	LEN (m)	5,766	1,206	6,474	4,767	4,159	2,425	2,566	3,852	5,232	8,150	3,877			48,475	
	VTF (mil)	4,950	.072	3,576	3,000	1,096	.940	.908	.845	3,465	4,928	.689			24,469	
	DEGREES	22.43	5.71	13.31	15.20	9.69	14.12	13.06	9.41	17.12	15.59	11.45				
	% SLOPE	41	10	24	27	17	26	23	17	31	28	20				
	DERATE	1	1	.2	.85	1	.8	.7	1	.75	1	1				
	IN LINE	.475	.100	.080	.340	.261	.209	.183	.224	.281	.375	.149			2,577	32
	ON LIFT	.364	.028	.109	.341	.382	.178	.124	.265	.248	.515	.178			2,731	34
CAPACITY	ON RUNS	.328	.025	.098	.341	.439	.190	.124	.305	.248	.515	.205			2,817	35
ANALYSIS	ACTIVE	1,067	.153	.287	1,022	1,081	.577	.430	.793	.777	1,404	.532			8,124	80
	INACTIVE	.267	.038	.072	.256	.270	.144	.107	.198	.194	.351	.133			2,031	20
	MAX CAP	1,334	.191	.359	1,278	1,352	.722	.537	.992	.971	1,756	.664			10,155	
	OLF														2,155	21
	SAT														8,000	
	BEGIN		.153			.324			.238						.715	9
	NOVICE					.757			.555			.266			1,578	19
ACTIVE	NOV/INT				.226		.192					.266			.684	8
DISTRIBUTION	INTERMED				.570		.385	.215		.389	.281				1,840	23
ANALYSIS	INT/ADV	.320			.226			.215		.388	.842				1,992	25
	ADVANCED	.427		.287							.281				.995	12
	EXPERT	.320													.320	4

ALTERNATIVE VII - TRAILS - SNOWCREEK BASE

POD DES	POD ACRES	SKIER CLASS	ASSOC LIFTS	PERCENT UTIL	ACTIVE SKIERS	LIMIT FACTOR	POD SKIERS	SKIERS / ACRE	TERRAIN ACRES	AV WIDTH OF TRAIL	LENGTH OF TRAIL	AVERAGE LENGTH	TOTAL RUNS	POD UTIL %
a	368.4	ADV	1	1.00	1067	.8	854	7	122	150	35412	6900	5.1	.33
b	221.7	ADV	3a	1.00	287	.8								
			3b	.10	963	.8	307	7	44	130	14678	7300	2.0	.20
c	161.9	INT	3b	.90	963	.8	693	15	46	130	15489	4800	3.2	.29
d	254.5	BEG	4	1.00	1081	.8	865	18	48	140	14949	5600	2.7	.19
e	60.3	B/I	5	1.00	577	.8	462	18	26	150	7447	2700	2.8	.43
f	100.0	INT	6	1.00	430	.8	344	14	25	160	6690	2800	2.4	.25
h	106.2	BEG	7	1.00	793	.8	634	20	32	140	9869	4350	2.3	.30
i	174.0	INT	8	1.00	719	.8	575	14	41	120	14914	6300	2.4	.24
j	301.9	INT	9	1.00	1404	.8	1123	12	94	130	31363	7050	4.4	.31
k	116.5	BEG	10	1.00	532	.8	426	17	25	120	9088	3700	2.5	.21
o	18.0	SKI SCHL	2	1.00	153	.8	122	20	6	212	1257	1250	1.0	
TOTAL	1883.4	TOTALS	11				6405	13	508		30.3 mi.	5245	30.7	.27

ALTERNATIVE VII - UTILIZATION - SNOWCREEK BASE

POD	LIFTS	ACTIVE	INACTIVE	% USE	SAOT	SEASON	20% UTIL	40% UTIL	60% UTIL	55% UTIL
a	1	854	214	1.00	1068	150	32040	64080	96120	88110
b	3a	230	58	1.00	288	87	5011	10022	15034	13781
	3b	770	192	.10	96	175	3367	6734	10101	9259
c	3b	770	192	.90	866	175	30303	60606	90909	83333
d	4	865	216	1.00	1081	87	18809	37619	56428	51726
e	5	462	115	1.00	577	87	10040	20080	30119	27609
g	6	344	86	1.00	430	135	11610	23220	34830	31928
h	7	634	158	1.00	792	135	21384	42768	64152	58806
i	8	575	144	1.00	719	175	25165	50330	75495	69204
j	9	1123	281	1.00	1404	175	49140	98280	147420	135135
k	10	426	106	1.00	532	175	18620	37240	55860	51205
o	2	122	31	1.00	153	87	2662	5324	7987	7321
TOTALS					8006	142	228152	456303	684455	627417

7 A fixed-grip lift providing access to the beginners' slopes just below Canyon Lodge.

8 A detachable lift that takes skiers up from Canyon Lodge to Solitude Lodge, providing access to trails in West Bowl.

9 A detachable lift that connects Canyon Lodge to Solitude East Bowl and Pyramid Peak.

10 A short fixed-grip lift, approximately parallel to Lift #9, that gives access to the beginner's trails on Pyramid Bench.

Uphill Transit Design The uphill transit requirement during peak hours (the first two hours of the day, during which 90% of the skiers arrive) is calculated as follows:

8,000 SAOT x 90%	=	7,200
Less: Ski School	-	153
Lift 2	-	47
Total Requirement		7,000

The main transit lifts are:

3a Total two-hour capacity: 5,600 skiers. This will operate at full speed and as a transit lift only during peak hours.

4 Total two-hour capacity: 3,702. Internal pod D skiers will require 1,946 of these seats, leaving an actual transit capacity of 1,756.

The overall peak-hour uphill transit capacity is 5,600 plus 1,556, or 7,156 skiers.

AVALANCHE

Under Alternative VII, the entire mountain will be made available for skiing and would require avalanche control. Control efforts require 12 personnel, five avalaunchers, and an overnight facility at Solitude Lodge.

SOILS

During the three phases of construction, 175 acres will be disturbed. Of these, 95 acres will be revegetated with shrubs and meadow grasses.

WATER

Wells will be located near Snowcreek Base, in the Motocross, and near Canyon Lodge.

Domestic Snowcreek Base would obtain water either from its local well if this source could be proven, or connect with MCWD sources on Old Mammoth Road if available. A domestic water storage tank would be located nearby. Canyon Lodge would be served by its nearby well, with a similar storage tank. Solitude Lodge would connect to the Canyon supply. Domestic water demand at 55% utilization is projected at 19.3 acre-feet per year.

Irrigation/Snowmaking If snowmaking were required, 21 acres of storage ponds (at an average depth of six feet) would be required. Storage could obtained by installing steel tanks or lining the natural basins the Moraines and Solitude Canyon, creating ponds. The Motocross well is expected to supply water to irrigation/snowmaking storage facilities. Projected water demand for snowmaking is 122.8 acre-feet per year.

Estimated annual irrigation demand for revegetation is 104.6 acre-feet per year.

Irrigation would continue until ground cover is well established and able to maintain itself without supplemental water. This is anticipated to occur by the fifth year (the second year after build-out). Since the Motocross well appears to be a potentially significant water resource, the possibility exists that, once irrigation is completed, the water could be diverted for community use.

Water for fire prevention at Snowcreek Base would come from nearby irrigation storage facilities. At Canyon Lodge, fire prevention sources would be pumped up from a storage pond in pod H. At Solitude Lodge, a sprinkler system would draw on the domestic supply.

Sewer Sewer facilities are required at Snowcreek Base, Canyon Lodge, Solitude Lodge and the maintenance garage. Snowcreek Base is about 1,000' closer to Old Mammoth Road than under Alternatives I-III, and the sewer connection will be used jointly by the ski area and the Snowcreek Village developer. Solitude Lodge would connect with Canyon Lodge, which would be served by a line descending into the Motocross area and returning to Snowcreek Base. From the base, the line would continue via Snowcreek Village to Old Mammoth Road. Wastewater output is estimated at 42,490 gpd.

There are potentially abundant underground water resources available on the Sherwin site. If these are successfully developed, it is expected that there will be no adverse impact on the town water supply.

UTILITIES

Electrical demand is estimated at 32,274 kilowatts per year, with another 525 kw needed in the event of snowmaking. Underground electrical and telephone lines would connect with existing systems via Snowcreek Village.

Estimated annual fuel oil consumption is estimated at 31,240 gallons per year. Fuel oil will be transported to the site by truck.

Solid waste would be transported to Snowcreek Base by ski lift. From there, it will be removed from the site by truck.

Active and passive solar space heating can be readily developed due to the high solar albedo potential of this alternative.

VISUAL IMPACT

This alternative is similar to all of the 8,000 and 12,000 SAOT alternatives, invovling 11 of the 12 seen visual regions of the site. The proposed lift to the top of Horn Ridge may not meet the Visual Quality Objective of Partial Retention, even with mitigation. A site-specific visual analysis would be complete during the design development and environmmental analysis phases of the project, and the findings of that analysis be used in the design process.

WILDLIFE

Lifts 1, 2, 3a, 4, 5, 6, 7, and 8, and Canyon Lodge are located along various deer migration routes toward Duck and Mammoth Passes. During spring staging, Lifts 2, 4, 5, and 6 would be closed, with Lift 3a used only for two-way transit. All trails associated with these lifts would also be closed. The rest of the lifts and their associated trails could be skied until migration begins.

Facilities would be placed as far as possible from the migration routes, and would be screened with vegetation or other natural features as much as possible. Sufficient vegetation for cover and browse would be retained when cutting runs and creating clearings for other facilities.

Spring skiing could probably be continued in the upper elevations while deer are congregating in the staging area. The Spring Burnoff & Wind Scour map (page 86) and the Staging Area map (page 102) indicate that skiing would necessarily avoid the staging area. The operation of Snowcreek Base and Lift 1a to and from the skiable terrain would have some, as yet unknown, impact on the deer, since these activities are located on the edge of the staging area. Both migration routes would be affected once the deer began moving out of the staging area. Therefore, skiing activities would cease at that time.

A system to monitor spring and fall migration would developed, along with a closure plan.

TRANSPORTATION

The proximity of Snowcreek Village gives this alternative a broader set of transportation options than any of the previous plans. Over 2,000 skiers, representing 25% of the area's capacity, will be able to stay within 1,500' of Snowcreek Base, enabling them to walk directly to the slopes. This will ease traffic loads elsewhere in Mammoth Lakes and reduce the need for parking at the base lodge.

Parking for 1,300 cars and 30 buses will be provided in an 11.3-acre lot near Snowcreek Base. Eight shuttle buses would operate between the base and the community.

1.82 miles of new access road would be constructed, including the Minaret Road extension through to the base lodge and a Ski Road connecting Sherwin Creek Road to the parking lot and base lodge. Sherwin Creek Road would also need to be paved up to the Ski Road.

The ski area maintenance garage is located near the northern edge of the site, about

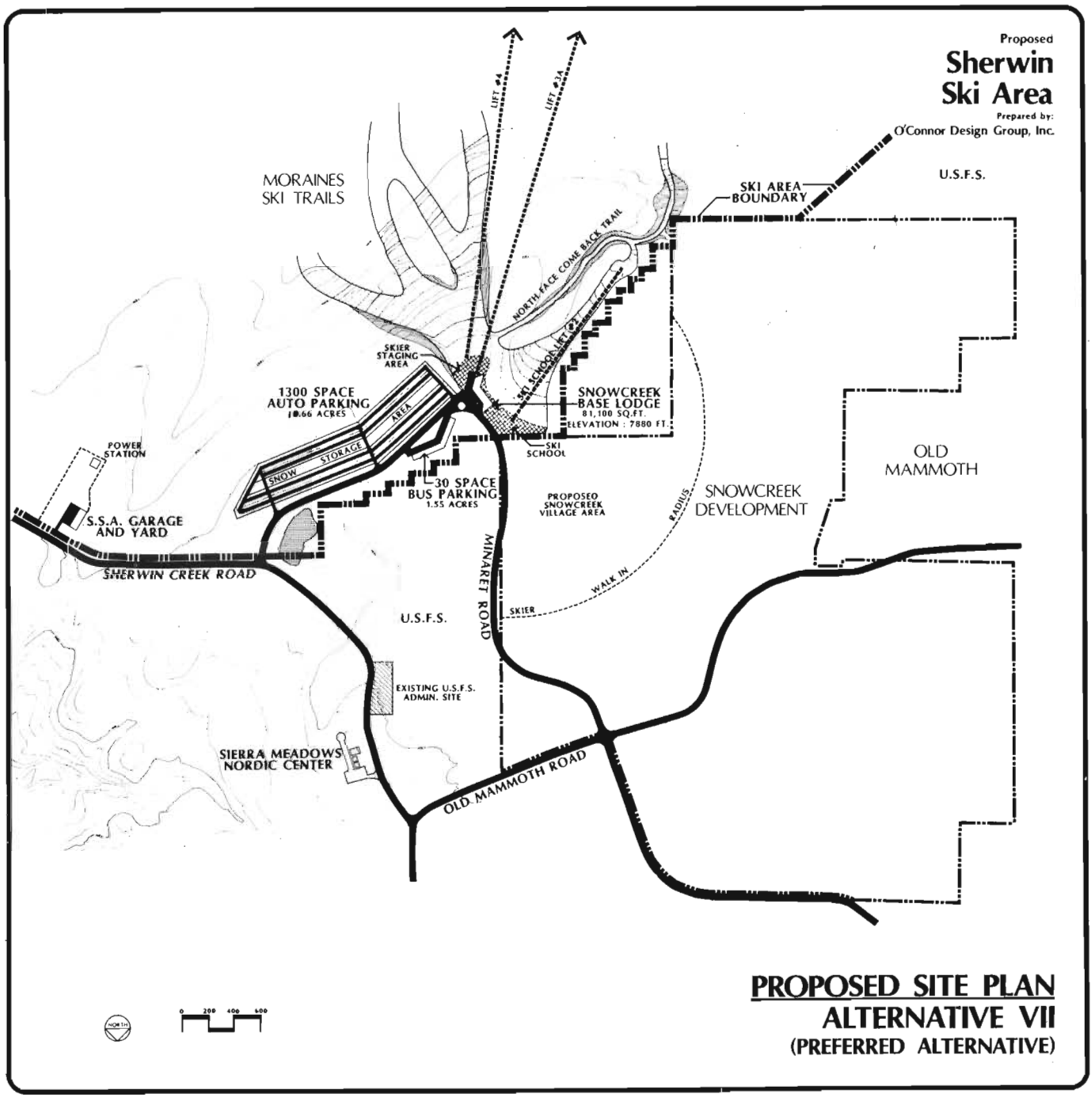
1,200' east of the Ski Road intersection on Sherwin Creek Road. A moraine ridge sequesters it from all view corridors.

CONSTRUCTION

Construction would take place in three phases. Phase I involves lifts 1, 2, 3, and 4, and will give the mountain an initial capacity of 2,028 skiers. Phase II adds lifts 5, 6, 7, and 8, and brings in an additional 2,670 skiers. The final phase includes lifts 9 and 10, and accommodates 3,302 more skiers, for a total of 8,000 SAOT.

CULTURAL RESOURCES

This alternative should not conflict with any of the nine identified archaeological sites within the Sherwin area. Cultural resource sites would be avoided during construction and/or any land disturbing activity. If an unrecorded site is found during construction, work in the the vicinity of the site would cease immediately and the Forest Cultural Resources Manager would be notified. If any negative effects are sustained by a site, the developer would bear the cost of restoration or mitigation.



ECONOMIC ISSUES

In the fifth year total capital expenditures for Alternative VII are estimated at $35.55 million, or $4,443 per SAOT. Gross annual revenues are $21.71 million, with annual operating costs totalling $13.20 million and a 25.6% return on equity. 329 employees would be needed to operate the mountain.

PROS

Relocating the base lodge results in a number of benefits:

—The buffer zone between the lodge and the deer staging area is increased from 250' to 700'. There are 1,400' between the lodge and the nearest migration paths.

—The adjacent private property development would accommodate over 2,000 skiers, reducing vehicular transit requirements by enabling as many as 25% of the area's skiers to walk to the slopes.

—Community utility lines are 1,000' closer to the base lodge site, resulting in substantial construction and maintenance savings.

—Skiers would be able to ski directly to the edge of Snowcreek Village to use the food service, rental, and other facilities located there. The added convenience should make the Sherwin Ski Area more competitive, resulting in increased skier days. Further, the equipment rental, food service and retail space required in the base lodge could be substantially reduced, since these services would be readily available in the village.

—Year-round use of Snowcreek Base Lodge would result in increased revenues for both the ski area and the community.

The lift configuration of this alternative also presents advantages:

—Lift 3, a high-speed detachable lift, may be converted into a gondola for scenic summer rides from Snowcreek Lodge to Red Peak, increasing both the use of the lift and off-season revenues.

— Fingers Station, which appears as a shuttle stop in the other 8,000-SAOT alternatives, is not needed, due to the high uphill transit capacity of the two lifts at Snowcreek Base. The redundancy created by these two lifts also provides additional access in case of emergency.

—Alternatives I-VI use two lifts to bypass the avalanche and rockfall hazards in Blocky Canyon. Alternative VII gains access to the North Face with just one lift (#1) directly up the canyon. Though the possibility of avalanche damage to the lift towers and equipment is greater, skier safety would be improved due to better unloading terrain available at the top. Using one high-speed lift reduces in-line and on-lift time by about 50%, contributing to a better ski experience, and decreases the capital expediture that two lifts would require. Snow maintenance and grooming costs are simplified, with a corresponding reduction in operational costs. Lastly, the placement of this single lift eliminates the need for skiers to traverse westward to reach the trails, thereby reducing congestion and increasing safety.

Among the alternatives, this one offers the highest return on equity, the lowest pod utilization percentage, the greatest amount of summer use, and the most walk-in access. Of the 8,000-SAOT plans, it allows the most vertical transport feet and requires the lowest number of parking spaces and buildings.

CONS

Relocating Solitude Lodge would make it more visible from the community. Some mitigation is possible by using exterior materials that complement Red Peak's distinctive color.

Lift 1 is vulnerable to avalanche and rockfall damage. Rockfall damage could be mitigated through proper tower placement. Though active avalanche control measures will prevent damage in most years, during years of extraordinarily heavy snow it is possible that the lift could sustain damage in spite of these measures. In this event, Fingers would not be accessible to skiers.

If no snowmaking were provided, beginner and novice/intermediate skiing would be available only in Solitude Flats and on Pyramid Bench during late season. Access to these areas requires multiple lift trips.

If Lift 9 were unusable due to power failure or high winds, it would be necessary for ski patrol personnel to guide beginning and novice skiers off Pyramid Bench using the emergency comeback trail provided.

Lengthening lifts 3a and 4 near Snowcreek Lodge will result in increased costs, though these should be offset by the lower utility development costs.

Landscaping and revegetation demands will be greater at the run-out area above the base lodge, resulting in increased costs and water use.

This alternative has the highest skier density per acre of any alternative considered.

2 MATRIX

This matrix graphically summarizes the information presented in the preceding discussions of Alternatives I through VII, and illustrates the relative merits and impacts of each alternative.

DESIGN

ALTERNATIVES	I	II	III	IV	V	VI	VII
SKIERS AT ONE TIME	4000	8000	12000	4000	8000	12000	8000
VERTICAL TRANSPORT FT.(mil.)	7.32	23.06	31.43	7.7	19.37	27.78	24.47
AVERAGE SEASON LENGTH (days)	122	145	146	150	132	148	142
NUMBER OF LIFTS	5	11	14	4	9	13	11
NUMBER OF LODGES & STATIONS	2	7	7	3	6	7	5
SKIER TERRAIN BY CLASS							
beginners	18%	17%	18%	22%	18%	22%	18%
intermediates	39%	42%	37%	39%	45%	27%	41%
advanced/experts	43%	41%	45%	39%	37%	51%	41%
SKIERS PER ACRE (average)	10.6	12	11	12.3	12	11.8	13
SKIABLE TERRAIN ACRES	303.9	531	850	260	519	786.4	508
MILES OF TRAIL	16.9	31.7	49.7	16.3	31.8	47.4	30.3
AVERAGE LENGTH OF TRAIL	5891	5366	5422	7191	6041	5729	5245
NUMBER OF TRAILS	15.2	31.2	48.4	12	27.8	43.7	30.7
POD UTILIZATION	33%	31%	43%	29%	30%	41%	27%
SEASON SKIERS (40% util.)	184373	464128	702388	234553	486467	711023	456303
SEASON SKIERS (55% util.)	253513	638176	965783	351829	668893	977657	627417
SUMMER GONDOLA RIDERS	0	22300	22300	0	11400	11400	45600
SNOWMAKING (potential acres)	75	81	131	27	53	96	80
LODGE CONVENTION USE (days)	0	0	0	0	0	0	48

TRANSPORTATION

autos	810	1770	2730	960	1930	2880	1300
tour buses	15	30	45	15	30	45	30
transit buses	8	16	24	8	16	24	16
walk-ins (S AOT)	500	500	500	0	500	500	2000
parking acres	6.98	15.22	23.44	8.22	16.54	24.68	11.33
access roads (miles)	2.39	2.39	2.89	2.52	3.65	3.65	1.82
transit nodes required	2	2	2	1	2	3	1

PHYSICAL / BIOLOGICAL

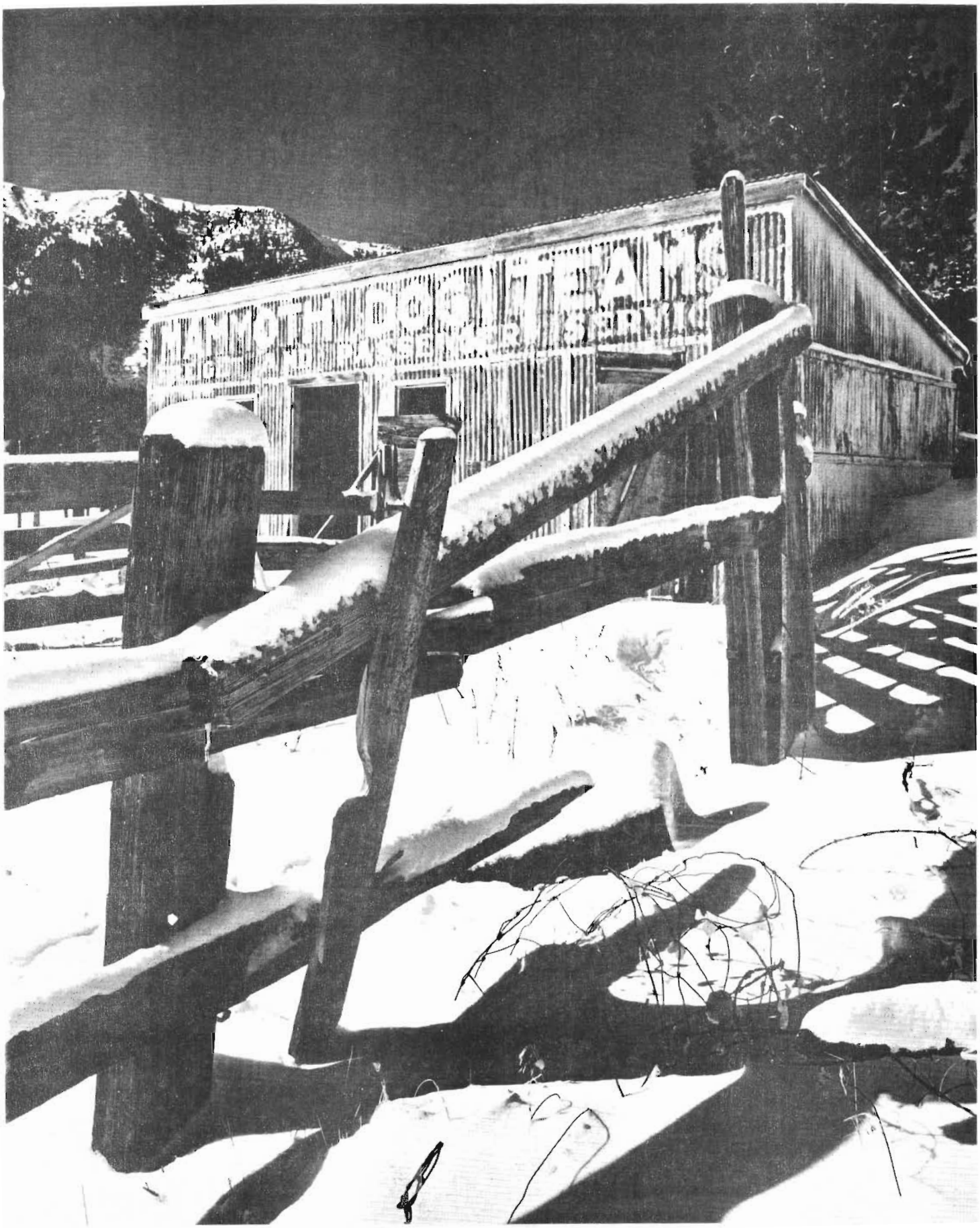
VISUAL IMPACT							
from community	LOW	MOD	MOD +	NONE	MOD	MOD +	MOD
from highway 395	LOW	LOW	MOD	LOW	LOW	MOD	LOW
from Lake Mary Rd.	LOW	MOD	MOD +	NONE	MOD	MOD +	MOD
from Sherwin Creek Rd.	LOW	MOD	MOD +	LOW	MOD	MOD +	MOD
NOISE IMPACT							
in community	LOW	LOW	MOD	LOW	LOW	MOD	LOW
on site	LOW	LOW	LOW	LOW	LOW	LOW	LOW
AIR QUALITY IMPACT	HIGH	HIGH +	HIGH ++	HIGH	HIGH +	HIGH ++	HIGH +
AVALANCHE HAZARD	HIGH	HIGH +	HIGH ++	HIGH	HIGH +	HIGH ++	HIGH +
TERRAIN MODIFICATION							
disturbed acres	88	143	214	74	132	201	175
revegetated acres	52	83	133	57	83	141	95
SOIL & WATER QUALITY							
surface runoff % increase	+3%	+55%	+87%	+21%	+40%	90%	90%
sediment increase (tons/yr)	61	99	148	51	91	139	121
WILDLIFE IMPACTS							
deer staging	LOW	MOD	MOD	HIGH	HIGH +	HIGH ++	MOD
deer migration	LOW	MOD	MOD +	MOD	HIGH	HIGH +	MOD
road kill potential	LOW	LOW +	MOD	HIGH	HIGH +	HIGH ++	LOW +

UTILITIES

WATER DEMAND							
domestic A/F year	7.78	19.10	29.65	9.90	20.52	30.00	19.3
irrigation A/F year	66.3	88.3	118.4	70.3	89.9	137.8	104.6
totals (4/7 yr. max.)	74.08	107.4	148.05	80.2	110.42	167.8	123.9
snowmaking A/F year	115.1	124.3	201	41.4	81.3	147.3	122.8
snowmaking storage acres	19	21	34	7	14	25	21
WASTEWATER FLOW (gpd)	20070	41730	61680	20925	36790	62010	42490
SOLID WASTE (cu.yd's.yr.)	4400	8800	13200	4400	8800	13200	8800
ELECTRICAL DEMAND (kw /yr.)							
lifts	7330	25340	40340	10100	25900	36720	30800
structures	737	1556	2211	737	1556	2211	1474
totals	8067	26896	42551	10837	27456	38931	32274
snowmaking	492	531	859	177	348	630	525
DIESEL FUEL DEMAND (gal /yr.)	13420	331900	48180	16500	29040	48840	31240
SOLAR ALBEDO POTENTIAL	LOW	LOW	LOW	MOD	HIGH	HIGH	HIGH

ECONOMICS

capital costs (mil.)	$16.35	$35.07	$49.17	$20.22	$33.80	$46.65	$35.55
cost per skier (thou.)	$4,088	$4,384	$4,097	$5,056	$4,225	$3,888	$4,443
gross revenue (mil.)	$ 8.44	$18.00	$32.46	$ 8.35	$14.85	$27.07	$21.71
operating costs (mil.)	$ 6.08	$13.41	$20.40	$66.42	$11.02	$17.17	$13.20
net cash flow	$ .83	$ 2.62	$ 5.19	$ .14	$ .86	$ 4.09	$ 3.64
net return on equity	12.7%	18.6%	26.4%	1.8%	6.3%	21.9%	25.6%
total employees	162	326	484	160	326	490	329



STUDIES 3

Following are the results of nineteen studies undertaken during 1985 to determine the full range of conditions and constraints that exist in and around the Sherwin site. With the exception of the Land Use, Slope Analysis and Construction sections (which were prepared by O'Connor Design Group, ski area consultants, architects, engineers and planners), the reports were prepared by independent consultants approved by the USFS, or by USFS specialists.

The text and maps discuss the methodology and scope of the studies, where appropriate, and summarize the findings and recommendations. The complete text of each study is on file at the USFS Inyo National Forest office in Bishop, California.

A list of the consultants who prepared these studies, along with their addresses and qualifications, appears in the appendices.

3 CLIMATE

In order to most accurately assess weather conditions in the Sherwin study area, same-day comparisons were made between the site and nearby Mammoth Mountain. The meterological data collected for the study area by the Mammoth Ranger District over the past 14 years is augmented by additional data collected by Mammoth Heli-Ski in 1979-80.

TEMPERATURE

Temperatures at Sherwin are similar to those at Mammoth Mountain, with mild summers and cold winters. Temperatures recorded in 1979/80 showed slightly warmer averages at Sherwin, as shown below:

Date	1/8	1/24	2/27	3/10	3/13	3/31	4/13
Sherwin	24	34	30	32	25	27	45
MMSA	20	33	32	24	26	20	42

Temperatures are in degrees Farenheit

The average winter temperatures at the site are usually below freezing at night and during periods of precipitation.

PRECIPITATION

Mean annual precipitation ranges from 40" of water at the higher elevations to 20" at the base areas. (At Mammoth, this range is from 80" down to 20"). Most precipitation occurs as snow. Since 1.6" of water equals about 1' of snow, this translates to a range of 25' down to 12.5' of snow.

Precipitation levels at the lowest elevations of the Sherwin site are analogous to conditions at MMSA's Lift 15 area, while the higher elevations are similar to the area at MMSA' Lift 4, which is at 8,700' elevation.

WIND

Prevailing winter winds at Sherwin come from the west and northwest, though there can be significant variation. The 1979/80 wind direction findings reflect this:

Date	1/8	1/24	2/27	3/10	3/13	3/31	4/13
Sherwin	W	Var	Var	0	SW	W	0
MMSA	W	E/NE	Var	0	SW	NW	0

In 1978/79 and 79/80, monitoring equipment was set up near the proposed Snowcreek Base site. Recorded windspeeds were similar to those recorded at the avalanche forecast center on Mammoth Mountain. However, recordings in the high elevations of Sherwin taken by Mammoth Heli-Ski personnel showed slightly lower average windspeeds than found at Mammoth Mountain:

Date	1/8	1/24	2/27	3/10	3/13	3/31	4/13
Sherwin	25	0	5	0	15	30	0
MMSA	30	5	10	0	20	30	0

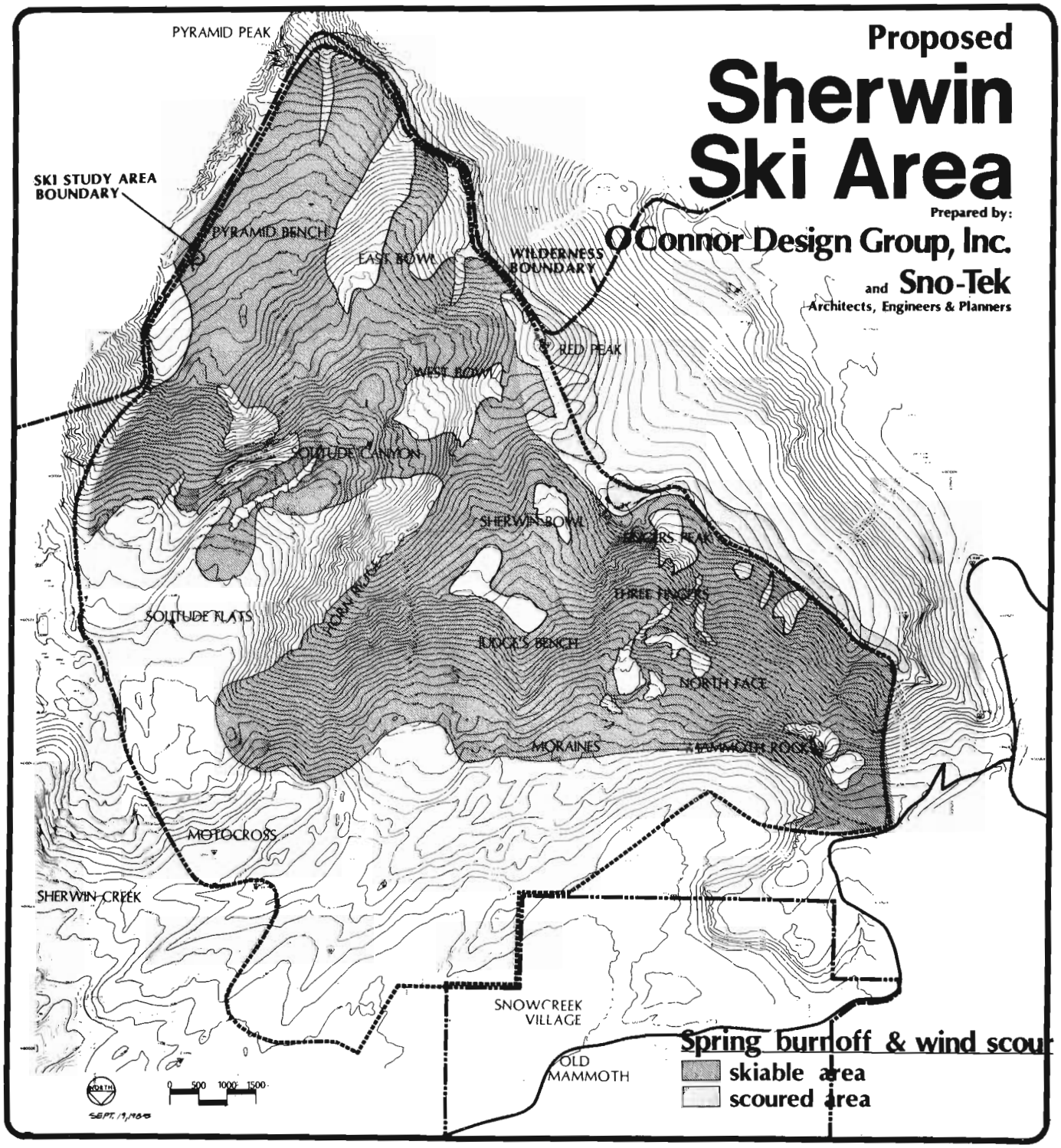
It is expected that wind conditions will be similar at both ski areas, and that lift closures will be about equally frequent. Wind and snow conditions affect operations at Mammoth Mountain on approximately 14% of the operating days each season. Lift shutdowns due to weather are anticipated in the utilization calculations for each alternative (see the analysis charts accompanying the alternatives).

SNOW COVERAGE

Snow coverage depends on how much snowfall is accumulated and retained. Generally, though the study area receives less snow than neighboring Mammoth Mountain, its mostly northern faces and steep slopes reduce the rate at which accumulated snow melts. Retention is better in the upper slopes than on the flatter lower slopes that comprise much of the beginner terrain. Mitigation measures that would improve accumulation and retention include snow fencing, snowmaking, surface grading and compaction, and avoiding wind scour and rock glacier areas when designing lifts and trails.

An analysis of photographs taken in the study area between 1965 and 1986 by USFS staff, MMSA staff, various consultants and the proponents, along with on-site observations between 1980 and 1986, resulted in the map on the opposite page. Placement of lifts and trails and the length of the ski season may be affected by the following conditions:

Spring Burnoff In the spring, direct sunlight and higher temperatures cause the snow line to gradually retreat, leaving the lower slopes of the ski area totally bare. With the exception of the North Face, skiable snow can only be found above 8,600'. Some east-


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE CANYON
SHERWIN BOWL
ROGERS PEAK
THREE TENORS
HORN RIDGE
SOLITUDE FLATS
LOCK'S BENCH
NORTH FACE
MORAINES
MAMMOTH ROCK
MOTOCROSS
SHERWIN CREEK
SNOWCREEK VILLAGE
OLD MAMMOTH
0 500 1000 1500
SEPT. 19, 1968
Spring burnoff & wind scour
skiable area
scoured area

and west-facing terrain in the Solitude Bowls and some north-facing terrain in Sherwin Bowl and on the North Face are historically prone to early "burnoff," and spring skiing depends greatly on proper placement of lifts to work around these areas. The map reflects the conditions in early June 1985, two weeks before the deer herd began migrating from the Sherwin Creek staging area up Solitude Canyon to the back country.

A comparison of this map with the proponents' preferred alternative appears to indicate that it would not be possible to ski the North Face or Solitude Flats during the spring. However, good snow management and grooming should preserve these trails until the season ends. The Fingers chutes are currently popular with some local skiers despite constant wind scour that leads to early burnoff. Properly installed snow fencing and periodic grooming should retard snow loss here, though in late season some skiers may be required to walk from Chair 1 to enter the chutes.

Wind Scour Although snow conditions vary from year to year, the prevailing wind direction appears to be constant, resulting in some high wind scour areas, particularly on the southwest ridge, the Judge's Bench, and several exposed slope protrusions in the Solitude Bowls. Snow fencing and prompt grooming immediately following snowfall will inhibit snow loss to some degree in critical areas.

Snow coverage varies from pod to pod, due to the range of conditions that exist on the mountain. Expected days of skiable snow coverage per season are as follows:

Pod	# Days
A	150
B	150
C	175
D	87
E	87
F	150
G	87
H	135
I	175
J	175
K	175
L	87
M	150
N	150

FIRE 3

HAZARDS

The fire hazards and risk analysis survey, conducted by USFS Mammoth Ranger District Fire Management Officer Jim Coleman, addresses conditions within three zones defined by the Mammoth Ranger District's Pre-Attack Plan.

The first of these is the "crest zone," which includes the upper reaches of the study area. Alpine and sub-alpine terrain is broken by ridges, rocks, streams, and other natural barriers that interrupt the spread of fire. Large fires are rare in this zone. The middle portion of the Sherwin site is a "general forest zone," with a variety of mature timber, standing dead trees, and dead logs on the forest floor. There have been no large fires in this area. The lower portion of the Sherwin area, where the base facilities would be located, is "front zone:" chaparral, sagebrush, and other grasses that contribute to a high fire potential under hot, dry conditions. It was in this zone that the Sherwin area's only major fire destroyed about 100 acres in 1972.

Lightning causes an average of three to five fires each year within the study area, though these fires are rarely larger than one acre in size. The Sherwin Creek Campground and Mammoth Motocross, which adjoin the site, are the major fire risk areas due to the numbers of people they attract. Since the development of Sherwin Ski Area will bring more users into the area, the USFS anticipates that the fire risk will also increase, which will in turn mandate changes in the district's fire management program.

FIRE PROTECTION

Primary fire protection for the study area is provided by the USFS and the Mammoth Lakes Volunteer Fire Department (MLVFD). On National Forest System lands that are not within the service boundaries of the MLVFD, forces from the MLFVD are made available to the Forest Service on request under a contractual agreement.

USFS The Inyo National Forest has four Ranger Districts, three of which are near the study area. Each of these districts provide fire forces and engine modules during the May to October fire season. Also, each district has fire prevention programs established along regional guidelines.

The study area is within the Mammoth Ranger District protection boundaries. They are abutted by the Mono Lake engine station at Crestview, 12 miles to the north; and by the White Mountain engine station at Rock Creek, 15 miles to the south. Additional stations are maintained at Lee Vining, Bishop, Independence, and Lone Pine. A contract helicopter is stationed at Independence, 94 miles to the south, during the fire season.

Through interagency agreements, other fire forces are available locally, regionally, and nationally as the situation requires.

Mammoth Lakes Fire District At present, only a small percentage of the project site is included within the service boundaries of the Mammoth Lakes Fire District. Efforts are currently underway to extend the local fire district boundaries so they coincide with the town boundaries, bringing the entire ski area into the fire department's jurisdiction. The MLVFD is anticipated to provide protection for structures at Sherwin, while the USFS would retain primary forest firefighting responsiblity.

The Mammoth Lakes Fire Department currently occupies a two-story facility in Mammoth Lakes. A second, smaller facility will be completed by June 1986. This new station is located adjacent to the Sherwin site, enabling the MLFD to respond instantly to calls from the ski area.

Personnel include a fire chief, assistant chief, clerical person, and mechanic. A volunteer network of 52 firefighters is available on a paid-call system. The fire department owns two water trucks with a capacity of 500 gpm, an 85' aerial ladder truck, and four pumpers ranging from 750 to 2,000 gpm.

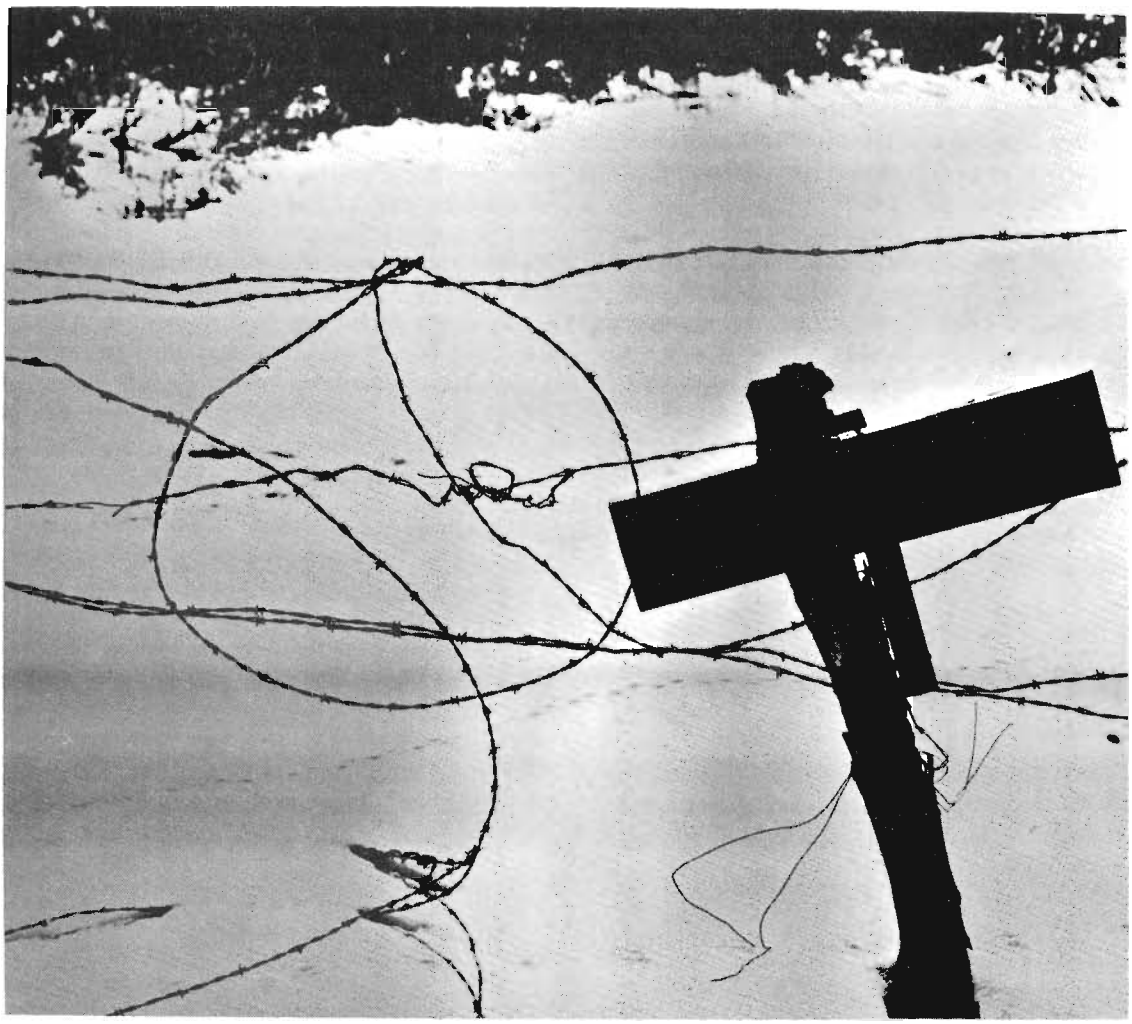
3 LAND USE

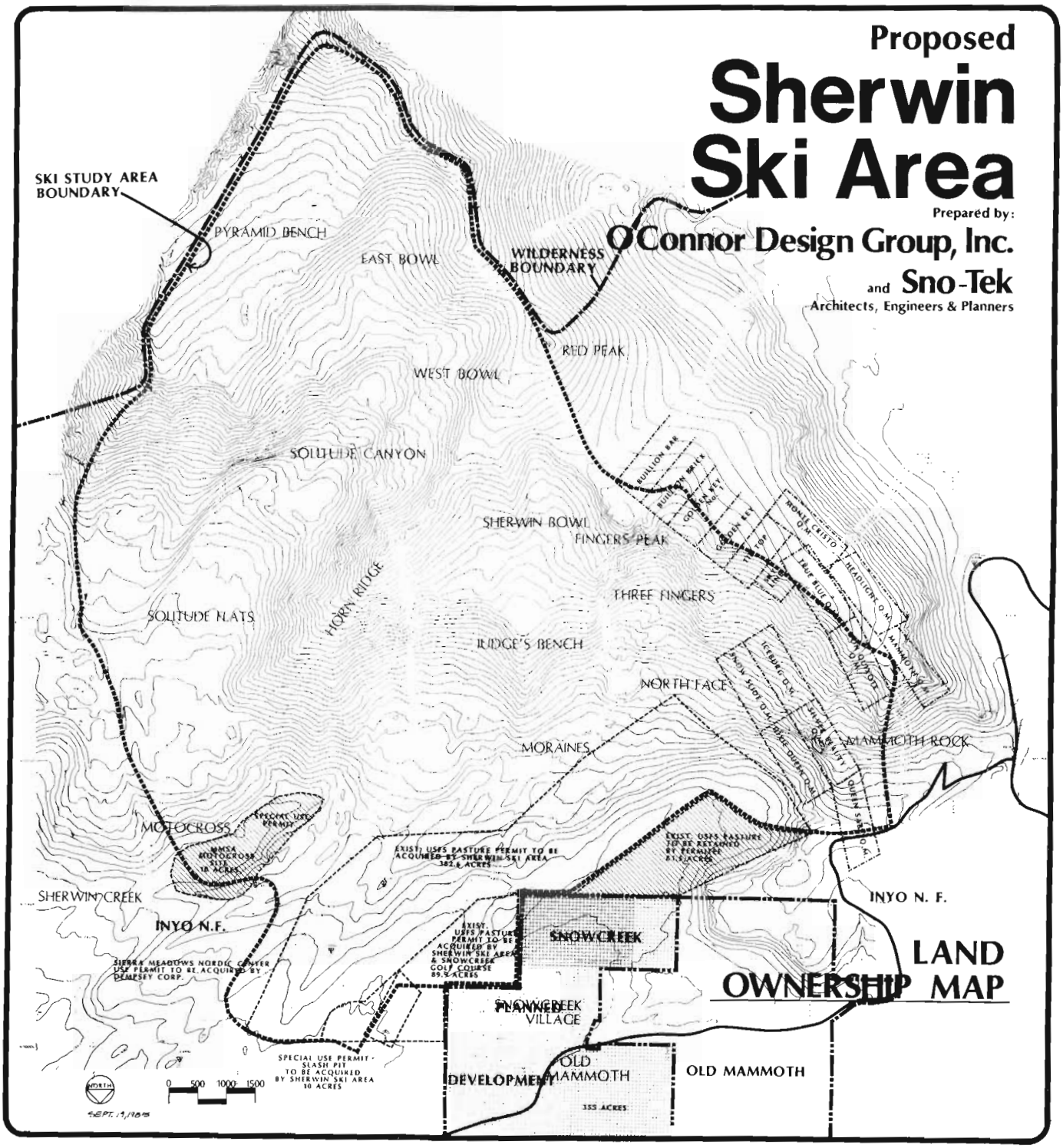
The proposed Sherwin Ski Area is located entirely on Inyo National Forest lands within the incorporated Town of Mammoth Lakes in Mono County, California. Under the current Town of Mammoth Lakes General Plan (Monoplan IV), Sherwin is zoned as an "Active Recreation" area (see Land Use Map #5 in Monoplan IV), and recommended for development as a 6,000-SAOT ski area (see pages II-3 and II-12 in Monoplan IV). Mammoth Mountain Ski Area is allocated 18,000 SAOT, for a total of 24,000 SAOT in the community.

The Forest Service direction regarding Sherwin is contained in the EIS for Monoplan IV, which identifies Sherwin as a potential ski area development site to be included in future planning. A subsequent Environmental Assessment increased the allocated capacity of Mammoth Mountain by 6,000 SAOT, to total the entire 24,000 SAOT allocated by community planning there.

The Town of Mammoth Lakes General Plan is currently being updated and put in final draft form for review. The Draft Town of Mammoth Lakes General Plan, and three of the four alternatives of the draft EIS prepared for it, have been developed to accommodate an 8,000-SAOT ski area at Sherwin. This would increase the town's alpine skier allocation to 32,000 SAOT.

Current land uses in and around the Sherwin site include:




Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE CANYON
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SOLITUDE FLATS
RIDGE'S BENCH
NORTH FACE
MORAINES
MAMMOTH ROCK
MOTOCROSS
SHERWIN CREEK
INYO N.F.
INYO N. F.
SNOWCREEK
SNOWCREEK PLANNED VILLAGE
OLD MAMMOTH DEVELOPMENT
OLD MAMMOTH
355 ACRES
LAND OWNERSHIP MAP
SEPT. 1, 1985

COMMERCIAL/RESIDENTIAL

The northern edge of the proposed ski area adjoins Dempsey Construction Corporation's Snow-creek Village development. When completed, the project will include hotels, condominiums, single family residences, retail shops, restaurants, an athletic club and a golf course. At build-out, the village will supply 9,000 beds.

MINING

In the western portion of the ski area are 16 non-working mining claims which should not conflict with the ski area.

RECREATION

The USFS has issued use permits for the following activities in and around the Sherwin site:

Trails The Mammoth Rock Trail, a 2.5 mile stock and day hiking trail, passes through the study area near the base of the north slope above a meadow. The USFS Mammoth Ranger District uses the trail to bring livestock from their pack station, located on Sherwin Creek Road, into the Lakes Basin. Sierra Meadows Equestrian Center also uses the trail. Total 1985 use was 160 recreation visitor days (RVDs: one RVD is 12 hours of use by one person). The ski area would bring lifts and runs across the trail, changing its character but not its function. There is little hiking activity in other areas of the site.

Under Alternatives II through VII, some of the ski area's Solitude Canyon facilities may be visible from the Sherwin Lakes Trail, which is located outside the study area. In addition, the road leading to the trailhead would be paved under one of the Motocross-based alternatives, probably increasing use of the trail. Summer construction and maintenance noise from Sherwin may be audible on the trail where it passes Solitude Canyon. The trail is predominantly used for day hiking, and mostly in the spring before the backcountry opens up. It is one of the few trails in the Forest that provides access to lakes outside the wilderness. 1985 use was estimated at 8,000 RVDs.

Motocross The Mammoth Mountain Ski Club operates a motocross track within the area's northeast boundary under Special Use Permit 5821. Races are held at the track each June, and the track is open to the public all summer. The USFS projects that ski development under a Snowcreek-based alternative would be compatible with the track, while a Motocross-based ski area would require its closure, perhaps transferring off-road motorcycle use to other areas of the forest. There were an estimated 25,000 RVDs in 1985.

Camping Sherwin Creek Campground is located on Sherwin Creek Road about 1 mile south of the Motocross turnoff. It is anticipated that development of Sherwin Ski Area would change the character of the campground, lowering the quality of the experience to some degree. These changes would be minimal under a Snowcreek-based ski area, and much more significant under a Motocross-based alternative.

The Boys' Club of San Gabriel Valley operates a private camp facility outside the study area near the Sherwin Lakes trailhead

under Use Permit 3021. Some ski area facilities and activity may be seen or heard from the camp. Under Motocross-based alternatives, a paved road would be constructed near the camp entrance.

There is little primitive camping within the Sherwin area, due to difficult access and lack of surface water.

Ski Touring & Pack Station Sierra Meadows Equestrian & Ski Touring Center is located outside the study area on Sherwin Creek Road just south of Mammoth Creek. Under Use Permit 4064, the center operates an equestrian facility and hayride/barbecue events in summer, while winter operations include groomed nordic trails and sleigh rides. Several nordic trails and the barbecue area are located within Sherwin boundaries. Summer impacts would be minimal, although the barbecue area may have to be relocated. A Motocross-based ski area would require paving and snow removal on an access road now used as a nordic trail, possibly resulting in the closure of the facility. Sierra Meadows provided 1,000 summer and 4,000 winter RVDs in 1985.

The Sherwin site is among the most desirable ski touring and telemark skiing areas in Mammoth Lakes. It is desirable that telemark skiing could continue with the development of the alpine ski area. Ski touring could be diverted to other areas in the Mammoth region.

Helicopter Skiing Mammoth Heli-Ski, which operates under Use Permit 4077, concentrates most of its operation along San Joaquin Ridge, using Sherwin as a second area when demand is high. The company has access to other possible sites that are currently underutilized, and can move into those areas if ski area development makes Sherwin unavailable.

Balloon Rides A hot air balloon operation is based on private land to the north of the Sherwin site, and operates under an unnumbered use permit. For safety reasons, the balloonists would need to exercise care to avoid the ski area.

Other recreational uses in and around the Sherwin area include:

Snowmobiling Snowmobiling accounted for 100 RVDs in 1985, mostly along Sherwin Creek Road outside the ski area boundary. This area is an important access route to areas south of Mammoth Lakes. Public snowmobiling would be prohibited within the ski area.

Hunting The Solitude Canyon deer migration corridor is popular with hunters in the fall. It is likely that hunting would be discouraged in the canyon to protect ski facilities and personnel. Hunting provided 800 RVDs in the region in 1985.

Wilderness Part of the area's southern boundary adjoins the John Muir Wilderness area. Though the Sherwin site is not visible from the wilderness, some summer construction noise may carry over the ridge that forms the boundary. Care would be taken to place ridgetop structures so they would not have a visual impact on the wilderness.

3 AVALANCHE

The Sherwin site encompasses numerous avalanche zones of varying size. Though these zones are widely scattered throughout the area, the major avalanche paths are located on the north face from North Ridge to Hidden Lake Meadow; in the Three Fingers-Moraines vicinity; on both the northwest and southeast sides of Horn Ridge; the east and west Solitude bowls; and the slopes that fall from Pyramid Peak's north face into Solitude Canyon.

Detailed avalanche management plans for each alternative have been developed by avalanche consultant Norman Wilson. Recommended control methods fall into three categories: planning, structural defenses, and active avalanche control.

PLANNING

The avalanche zone maps on the following pages enabled planners to design alternatives that would make minimum hazard slopes available and enhance an efficient avalanche control program. In developing the Sherwin lift systems, primary emphasis was placed on creating avalanche-free lift terminals and lodge facilities, and locating lift lines where a minimum of tower protection would be required.

STRUCTURAL DEFENSES

Special design measures should be taken to protect facilities located in proximity to avalanche areas, in the rare case that an avalanche should overrun its predicted limits. These defenses are designed and tailored for the specific facility to be protected. Lifts should be constructed so that the fewest possible towers are located within avalanche areas.

Structures at the Fingers site should be reinforced against possible damage from avalanches on the North Face. Under the proponents' preferred alternative, Lift 1 would also be susceptible to damage. The natural occurrence interval for avalanches large enough to affect this area is 100 years. This interval could be significantly extended by active avalanche control measures, which also ensure that avalanches occur only when the lifts are not in use by the public or ski area personnel. The potential value of the Fingers facilities and the extreme costs associated with providing absolute structural protection make the acceptance of a low degree of risk appear reasonable.

At Canyon Lodge, construction of a concrete and earthfill deflection barrier is indicated to protect the facility's western end against damage from avalanches coming off Horn Ridge. The vertical barrier should intercept the avalanche at as low an angle as possible, not greater than 20 degrees. The barrier should be at least 33' above the ground level west of the facility, to accommodate a 20' snowpack with a 13' clearance.

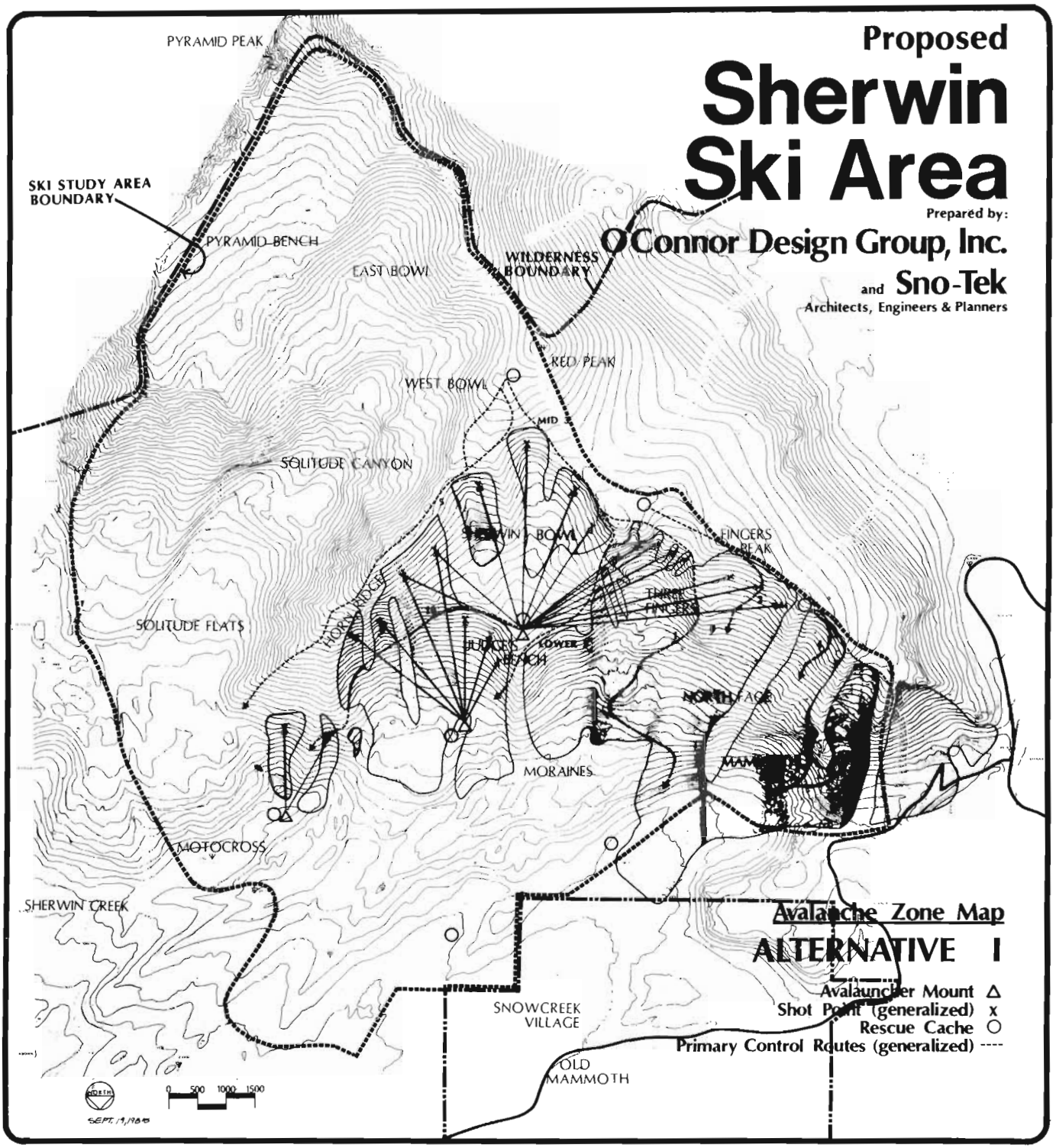
Defenses built at the above sites must receive final on-site design, concurrent with final design and location of the facilities. It is stressed that neither facility will lie within a discerned avalanche path: the defenses are recommended to protect the structures against exceptional events. Barring cataclysmic natural events, the proposed structures can be considered reliable.

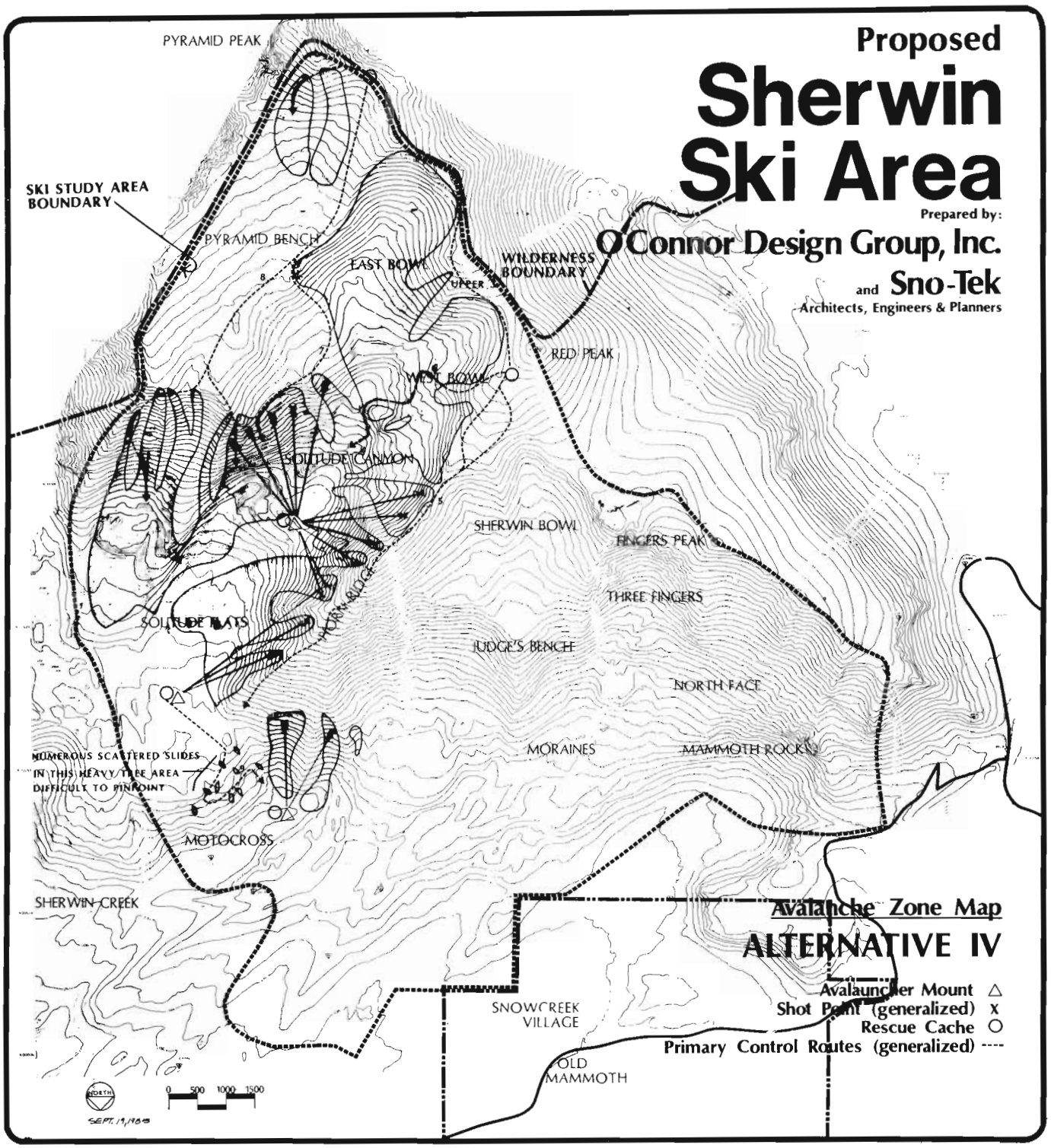
ACTIVE CONTROL

Within the Area Active control methods should be employed to ensure the safety of the slopes. These methods include snow compaction; the use of avalaunchers, hand-thrown explosive charges and ski cutting; and a system of trail closures and warnings during hazardous conditions. *USDA #489 Avalanche Handbook* offers complete guidelines for carrying out these methods.

Outside the Area The Sherwin site lies very near heavily used public roads, and a town. The site has historically been used by ski tourists, ski mountaineers and cross-country skiers. Old Mammoth Road and Lake Mary Road and the terrain they serve are a winter route for the groups mentioned above. Avalanches fall into parts of this area from steep slopes just outside the ski area boundary.

Alpine skiers would have easy access to these out-of-area slopes, and avalanche control work inside the ski area may trigger avalanches on the slopes. For this reason, it is suggested that a warning system be developed to keep recreationists off these outside slopes during control activities. This may mean that the ski area assumes undesirable liablities, and would require careful consideration. In any event, the


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
MID
SOLITUDE CANYON
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SOLITUDE FLATS
JUDGES BENCH
LOWER
NORTH FACE
MAM
MORAINES
MOTOCROSS
SHERWIN CREEK
SNOWCREEK VILLAGE
OLD MAMMOTH
0 500 1000 1500
SEPT. 19, 1985
Avalanche Zone Map
ALTERNATIVE I
Avalauncher Mount △
Shot Point (generalized) x
Rescue Cache ○
Primary Control Routes (generalized) ----

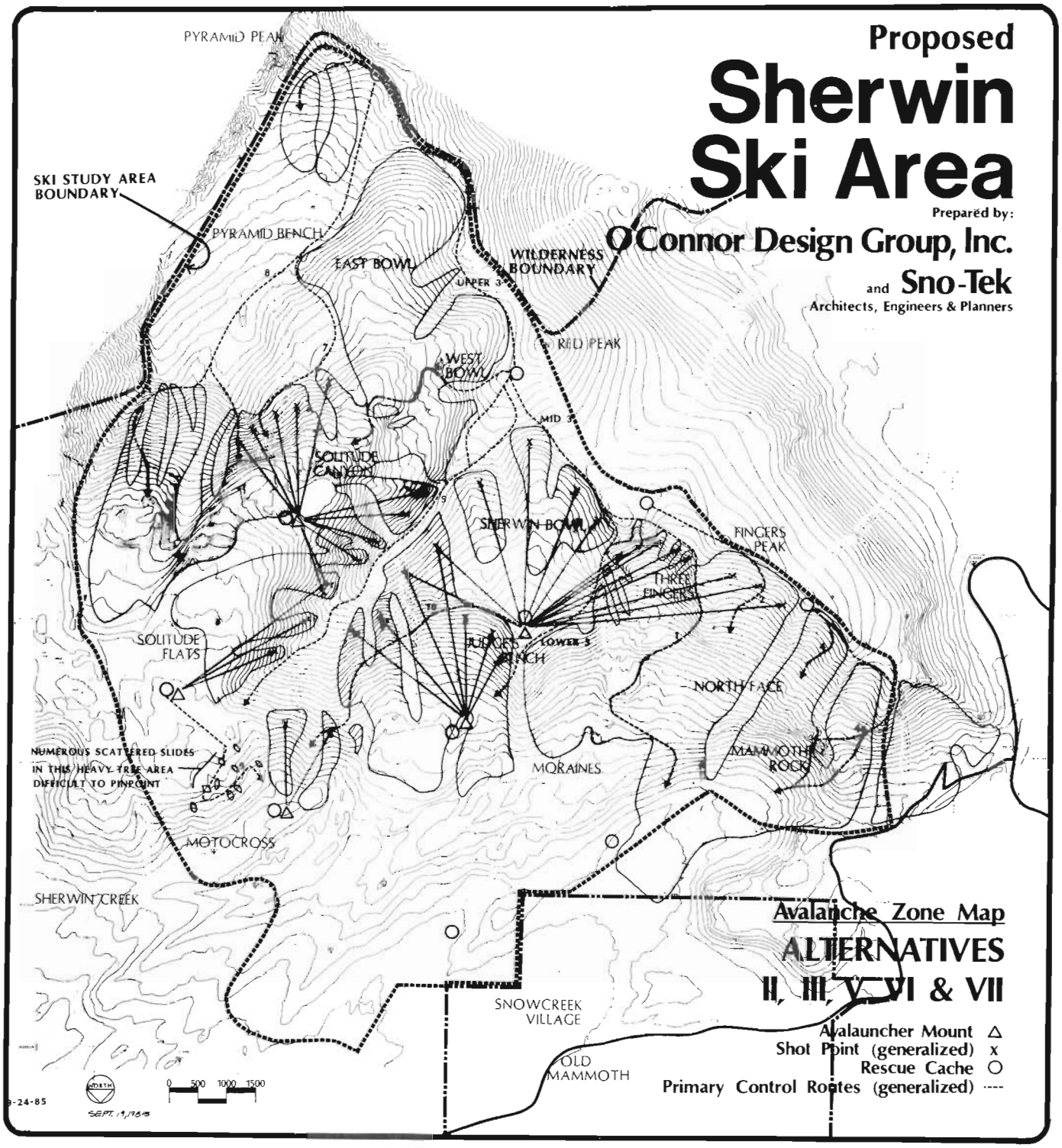

Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
UPPER
WILDERNESS BOUNDARY
RED PEAK
WEST BOWL
SOLITUDE CANYON
SHERWIN BOWL
FINGERS PEAK
THREE FINGERS
HORN RIDGE
SOLITUDE MTS
JUDGE'S BENCH
NORTH FACE
MORAINES
MAMMOTH ROCKS
NUMEROUS SCATTERED SLIDES IN THIS HEAVY TREE AREA DIFFICULT TO PINPOINT
MOTOCROSS
SHERWIN CREEK
SNOWCREEK VILLAGE
OLD MAMMOTH
0 500 1000 1500
SEPT. 19, 1985
Avalanche Zone Map
ALTERNATIVE IV
Avalauncher Mount △
Shot Point (generalized) x
Rescue Cache ○
Primary Control Routes (generalized) ----

ski area boundaries must be carefully and appropriately marked, along with areas where people may enter the hazard zones adjacent to the boundaries.

The Alternatives Alternatives II, III, V and VI make the entire ski area available to skiers, and have similar avalanche control objectives and requirements.

Alternative I opens Horn Ridge's north face, and sometimes the south face as well. Regular explosive control would be conducted north of the ridge, with the areas to the south temporarily or permanently closed to skiers.

Alternative IV opens Horn Ridge's south face to skiing, and sometimes the north face as well. Regular explosive control would



be conducted south of the ridge, with the areas to the north temporarily or permanently closed to skiers.

In the above two alternatives, the additional slopes north or south of the closure lines would require intensive and careful control, since they would receive relatively little snow compaction and would be more susceptible to temperature-gradient metamorphosis.

Personnel & Equipment Avalanche control teams usually consist of a director/technician, professional ski patrol personnel, lift operations personnel, and snow vehicle operators. The team members receive overtime pay for control work performed outside normal working hours. Overtime hours average 4 hours per man per maximum control day (45 days/season), plus 2 hours per man per minimum control day (15 days/season). Equipment requirements for each alternative are listed in the accompanying chart.

ADDENDUM

During the week of February 16-22, 1986, a series of rain and snow storms triggered a cycle of very large avalanches throughout the Sierra Nevada. Numerous avalanches occured in the proposed Sherwin Ski Area site. These avalanches affirmed predicted avalanche limits in several instances; exceeded predicted starting zone widths in one instance; and may have slightly exceeded predicted runout distance in another instance.

Most of these avalanches occurred on the North Face, where many hundreds of conifers were destroyed by two avalanches that created giant swaths through what had been dense, mature timber. The North Face avalanches merged at the valley floor, then ran to within some 600' of the predicted maximum runout distances. Debris was distributed across 50 to 60% of the width of the predicted runout zone.

These avalanche occurences generally affirmed the conclusions of the avalanche study described above, particularly the need for careful selection of facility sites, structural protection systems at the selected sites, and a carefully conceived and executed avalanche control plan.

No significant changes in the current plan are indicated.

AVALANCHE EQUIPMENT — BY ALTERNATIVE

Requirement	I	II	III	IV	V	VI	VII
Control Personnel	8	12	12	8	12	12	12
Lift Operators	3	7	7	3	7	7	7
Vehicle Operators	-	1	2	-	1	2	2
Avalaunchers	2	5	5	3	5	5	5
Firing Positions	2	5	5	3	5	5	5
Projectiles (w/propellant)	540	1500	1500	800	1500	1500	1500
Explosive Charges	4125	9000	9000	4125	9000	9000	9000
Explosive Prep Facility	1	1	1	1	1	1	1
Explosives Magazines:							
Major	1	1	1	1	1	1	1
Overnight	1	1	1	1	1	1	1
Overnight Facility	1*	1**	1**	-	1**	1**	1**
Office & Storage Facility	1	1	1	1	1	1	1
Rescue Caches	6	11	13	6	12	13	13
Rescue Beacons	15	20	20	15	20	20	20
Radio System:							
Base Station	1	1	1	1	1	1	1
Repeater	1	1	1	1	1	1	1
Portables	12	20	20	12	20	20	20
Small Tools & Equipment	yes	yes	yes	yes	yes	yes	yes
Snow Study Instruments	yes	yes	yes	yes	yes	yes	yes
Boundary Signs	150	150	150	150	150	150	150
Avalanche Signs	150	150	150	150	150	150	150
Rope for Sign Lines (feet)	10,000	10,000	10,000	10,000	10,000	10,000	10,000

* at Sherwin Station

** at Solitude Lodge

3 GEOLOGY

The Sherwin site reflects the complex geologic history of the Mammoth Basin. Pre-Tertiary metamorphic and granitic rock forms the backbone of the Sierra Nevada range, with Tertiary volcanic rock, Quaternary glacial and lake deposits and more recent alluvial and volcanic material bedded throughout the basin. The basin floor was formed by the subsidence of an enormous collapsed caldera centered near Long Valley, which was then filled with volcanic rock, glacial deposts, and alluvial outwash from the surrounding mountains. A unique feature of the Sherwin area is the collection of rock glaciers and talus deposits located throughout Solitude Canyon.

Surface soils are generally coarse-grained and non-cohesive, and are products of granitic decomposition. Gravel, cobble, and boulder fragments are common, though silty sand predominates. Soils are generally classified as inorganic, through there are random pockets of meadow soil in Solitude Canyon and along the lower slopes on the north.

Engineering geologist Donald Asquith studied the geologic conditions on the Sherwin site. His report indicates that Sherwin is geologically suitable for extensive development, provided mitigation measures as recommended below are implemented in the project's design and construction.

Geologic Units There are two basic groups of geologic units:

1 Bedrock units, including granitic and metamorphic rocks. Site constraints posed by these units are limited to a near-flat joint set that apparently developed behind the old Solitude erosion surface. At some sites, this joint set may reduce the tensional strength of rocks that would otherwise be considered hard. Foundation costs at these sites may rise due to the need for deeper drilling and/or grouting. Sites on metamorphic bedrock appear to have no significant constraints beyond excavation costs, which would be high for any bedrock site.

2 Surficial deposits include active and inactive glacial and talus units. The active rock glaciers and talus deposits present the highest level of site-related geologic hazard. Geologic constraints for surface glacial deposits depend primarily on the present degree of activity. Active talus or rock glacier deposits are unsuitable facilities sites. Areas of questionable activity are considered marginally suitable for use if no other site can be found.

Landslides The distribution of landslides resulting from the May, 1980 earthquakes indicates that the project site has a low potential for seismically induced landslides. The slides that did occur were located on very steep slopes, and would probably have occured within a relatively short period of time in any event.

Cuts In areas of public use, the following approximate limits apply:

Bedrock: 1:1 slope
Surficial deposits: 1.5:1 slope

In areas not used by the public:

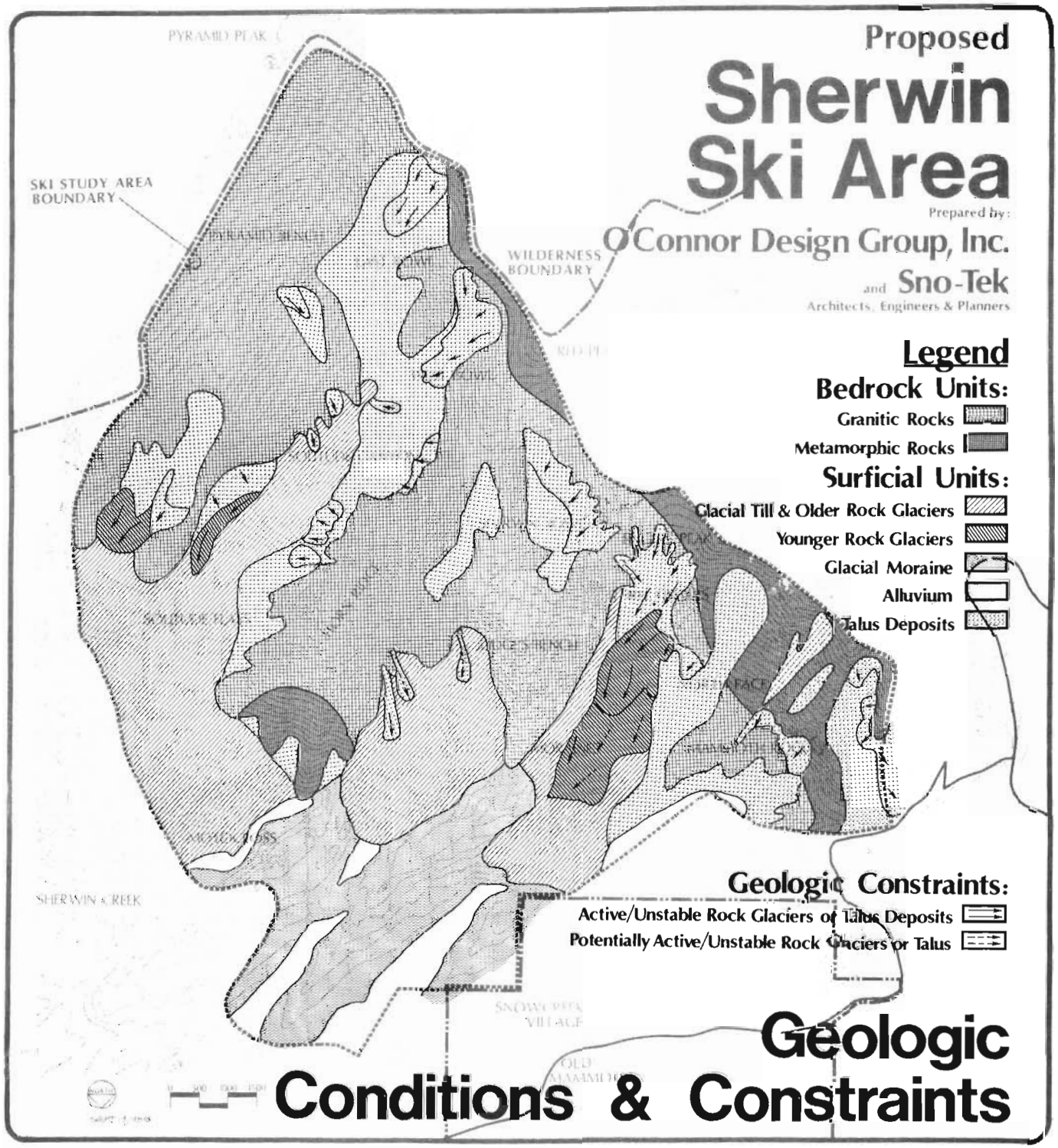
Bedrock (up to about 20' high): 0.5:1
Surficial deposits (up to about 8' high): 1:1
Surficial deposits (between 8' and 20'): 1.5:1

Accommodation for large boulders in the surficial deposits may reduce effective cut slope angles. These are preliminary recommendations. More precise recommendations should be developed from more detailed investigation of specific sites and road alignments.

Erosion control should not be a major site design problem, since the bedrock units are highly resistant to erosion and the glacial deposits generally have high rates of infiltration that tend to minimize surface runoff. Ground disturbance, however, greatly reduces infiltration rates. Therefore, disturbed erodable areas must be stabilized in accordance with the best management practices.

Liquefaction The potential for liquefaction at structure sites on alluvial deposits at lower elevations should be resolved as part of the soils engineering investigations that will be required for these sites.

Minerals Deposits of gold, silver and tungsten are likely present on the site, though they probably could not be economically extracted under current or foreseeable conditions. Preclusion of their extraction as a result of this project is not a significant issue.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
WILDERNESS BOUNDARY
PYRAMID PEAK
Legend
Bedrock Units:
Granitic Rocks
Metamorphic Rocks
Surficial Units:
Glacial Till & Older Rock Glaciers
Younger Rock Glaciers
Glacial Moraine
Alluvium
Talus Deposits
Geologic Constraints:
Active/Unstable Rock Glaciers or Talus Deposits
Potentially Active/Unstable Rock Glaciers or Talus
SHERWIN CREEK
SNOWCREST VILLAGE
Geologic
Conditions & Constraints

THE ALTERNATIVES

Since all potential geologic hazards or constraints that can be directly identified or inferred at this stage of the project have been either avoided in the existing designs, or can be completely mitigated by minor changes in design detail or facilities siting, there is no clear geological advantage among the proposed alternatives.

REGIONAL HAZARDS

The presence of an active fault along the south edge of Mammoth Creek, which could pose potential rupture hazards to the project and an increased level of seismic hazard to project facilities, has been previously discounted in the preparation of the IMAGE Seismic Safety Element. Though recent earthquake swarms have tended to concentrate near the general trend of this fault, suggesting renewed activity, the existing weight of evidence indicates that this old (200,000 years or more) fault zone is inactive and not a hazard to the proposed project.

A large number of earthquakes in the range of magnitude 6 have recently occured. This indicates that the maximum probable event for the site should be increased from that given in the IMAGE SSE, to a level of approximately magnitude 6.5 located within 3 to 5 km.

The first actual records of strong earthquake motion in the Mammoth area were made in May, 1980 by instruments placed in the Mammoth High School gym by the State Division of Mines and Geology. The maximum recorded ground acceleration was 0.43g. Taking into account acceleration recorded at Convict Creek, which is closer to the larger magnitude events; and the possiblity of such an event being located closer to Mammoth, the recommended project design acceleration is 0.5g as an instrumental value. Values utilized in engineering design may vary downward from this value, depending on the design procedure used. The choice of such values are a matter of engineering judgment, and are beyond the scope of this report.

Earthquake swarms concentrated in the southern part of Long Valley and near Mammoth Lakes, and an apparent uplift along the general alignment of the old (700,000 years) collapsed caldera, have suggested to some observers that there may be a imminent resurgence of volcanic activity in the area. The area of concern, as identified by the earthquake swarms, is in the southern portion of Long Valley, generally south of Casa Diablo Hot Springs. This area has not experienced surface volcanic activity for about 200,000 years.

On the other hand, the area of most recent volcanic activity (within the last 600 to 700 years), the Inyo and Mono Craters trend, has been quiet during the recent events. Had these events been concentrated along or near this more recent trend of volcanic activity, the cause for concern would have been substantially greater.

Continuing events in the Mammoth Lakes region are being monitored by government agencies and university-based scientists. In addition, the US Geologic Survey has prepared a hazard response plan to be implemented should future events dictate that such a response would be appropriate. Given the high level of interest that the area has generated in the scientific community, it is very unlikely that any significant geologic or seismic event will go unnoticed.

3 SLOPE ANALYSIS

The overall quality and capacity of a ski area is based on the snow it receives and on the available terrain.

Developing a slope analysis map was the first step taken in analyzing the Sherwin area. Six categories of terrain were identified:

% Slope	Skier Class
0-10	flat
10-20	beginner
20-40	intermediate
40-55	advanced
55+	expert
Rocks	unskiable

The aerial base map used in this study has contour intervals of 10', sufficient for general design but not specific enough for the level of design required in this study. In order to get more specific data, many on-site investigations were conducted during both summer and winter between 1980 and 1986. Participants in these studies were Carl Martin, USFS and Sno-Tek; Robert Wood, USFS Winter Sports Specialist; and Allan O'Connor and Tom Dempsey, ski area proponents. These investigations helped determine lift and pod configurations; lift, trail, road and building locations; and further refinement of the seven skier levels used in the analysis charts. These levels include beginner, novice, novice/ intermediate, intermediate, intermediate/ advanced, advanced and expert.

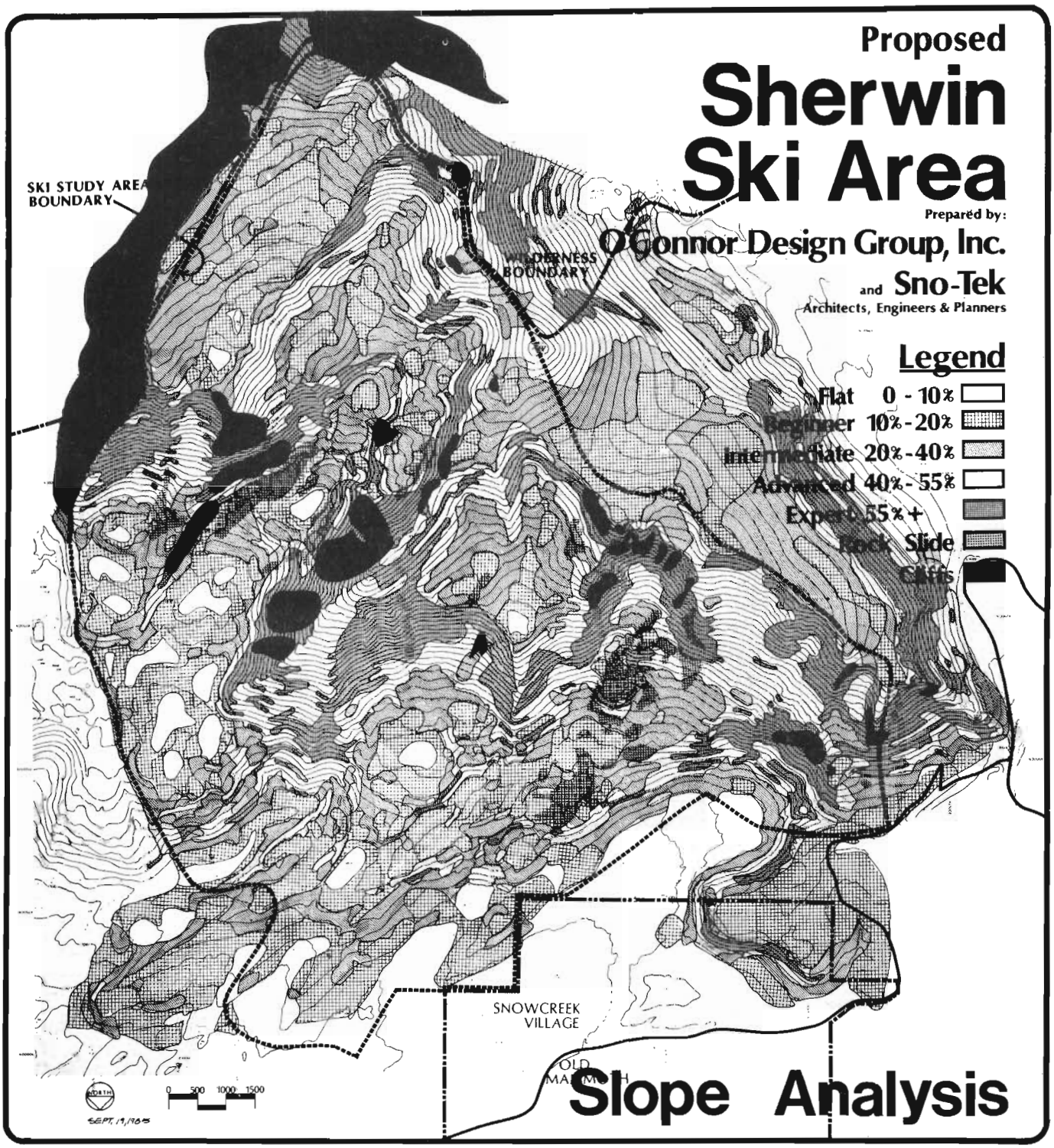
The skier capacity of each pod was found by calculating the mechanical capability of the lifts, the physical capability of the terrain and the sensitivity of the surrounding environment, using criteria developed by the USFS, O'Connor Design Group, Ecosign, and other ski industry consultants.

The skier densities for each skill level vary between US ski areas. Densities for Sherwin were derived from observation and analysis at neighboring Mammoth Mountain over the past 12 years:

Skier Skill Level	Density
Beginner	20/acre
Novice	18/acre
Novice/Intermediate	16/acre
Intermediate	14/acre
Intermediate/Advanced	12/acre
Advanced	6/acre
Expert	8/acre

Ski industry standards limit the net developed trail terrain to 35% of gross pod area. Under Alternative VII, 1,883 of the area's 3,300 acres (or 57% of the total area) are included within pods. The total trail acerage under this alternative is 508 acres, or 27% of the gross pod acerage—well within the industry standard. 508 acres represent 15% of the study area's total acerage.

Alternatives III and VI, with 12,000 SAOT, exceed the 35% guideline with 43% and 41%, respectively. Remaining within the limit ensures a superior ski experience and better retention of the site's natural qualities.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
SKI STUDY AREA BOUNDARY
WILDERNESS BOUNDARY
Legend
Flat 0 - 10%
Beginner 10% - 20%
Intermediate 20% - 40%
Advanced 40% - 55%
Expert 55% +
Rock Slide
Cliffs
SNOWCREEK VILLAGE
OLD MAMMOTH
0 500 1000 1500
SEPT. 19, 1985
Slope Analysis

3 WATER

The proposed Sherwin Ski Area is within the Mammoth Creek watershed of the Long Valley subunit of the Owens Hydrologic unit of the South Lahontan Drainage Province of the State of California. Bill Hutchison, registered hydrologist, conducted the hydrologic analysis of the site; James Ognisty of Triad Engineering prepared the water supply, water demand, and water quality assessments.

WATER SUPPLY

The Sherwin Ski Area watershed does not contain any perennial surface streams or watercourses. Though seasonal springs are known to exist, they appear only briefly during the spring snowmelt. There is little potential for development of reliable water supplies from surface water sources.

The hydrologic analysis of the Sherwin Ski Area shows a significant potential for development of groundwater resources. The steady-state hydrologic balance indicates that groundwater outflow is likely to be available in four areas:

—Downstream end of drainage subarea II
—Downstream end of drainage subarea III
—Downstream end of drainage subarea IV
—Adjacent to Canyon Lodge, subarea IIa

These four sources have an estimated potential to supply about 2,119 acre-feet per year. During maximum drought conditions, the outflow would be reduced to about 584 acre-feet per year. In addition, the potential groundwater storage basins associated with these subareas have an estimated capacity of approximately 2,250 acre-feet—an amount roughly equal to the steady-state annual groundwater outflow, which indicates that deep well sources may produce a reliable, long-term water supply.

Comparing the total water demands with the potential well yields on the site indicate that adequate ground water resources may exist for all the alternatives. The groundwater basin at the downstream end of Drainage Subarea II (near the Motocross) has a potential well yield of 695 acre-feet per year, and is the most likely source of water for the ski area. Drainage subareas III and IV, which would feed wells along the northern boundary of the ski area between the Motocross and Snowcreek sites, are not as large, though they are still potentially significant water sources, together capable of meeting the needs of an 8,000-SAOT alternative. The water supply may change after trail construction, since runoff in cleared areas can increase by up to 80%. This water will be lost as groundwater recharge unless contained by percolation ponds.

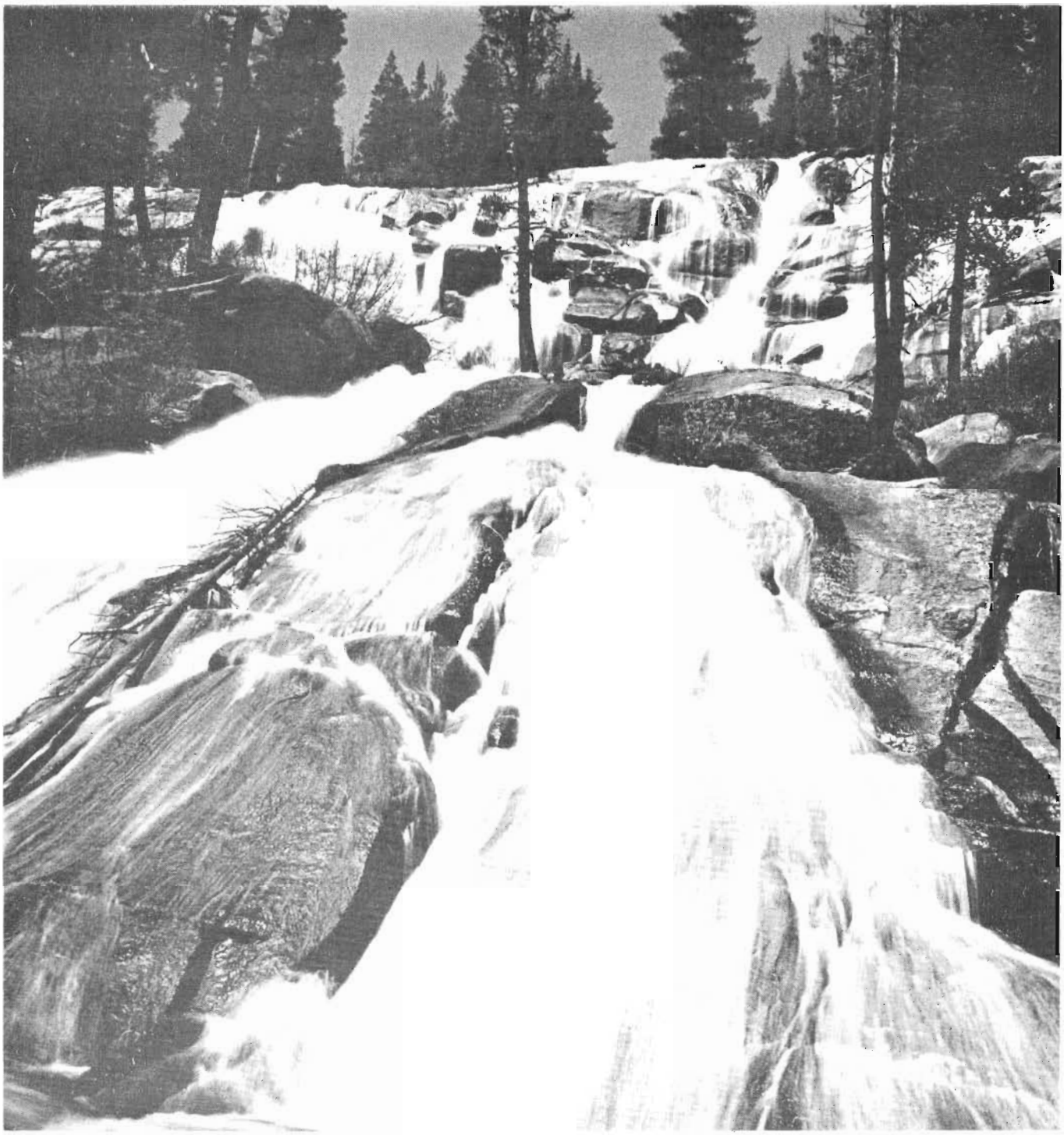
Detailed geohydrologic studies are needed to accurately determine the potential yields from individual wells. However, approximations of potential supply capacities can be made from available information. Conservative supply estimates are summarized in Figure 1.

There is a concern regarding the quality of water obtained from the site's deep well sources. An MCWD test well analysis indicated that significant concentrations of mercury, iron, and manganese may be encountered. Mercury was the only constituent that specifically exceeded Public Health Drinking Water Standards toxic concentration limits, and this excess was marginal. Since only one water quality sample was analyzed, it is not certain that the results represent the character of the entire groundwater supply in this area: it is possible that water extracted from different depths, or even slightly different horizontal locations, will not show the same

FIGURE 1: POTENTIAL WELL YIELDS

Well Location	Tributary Subarea	Total Depth	Depth to Water Level	Mean Annual Groundwater Recharge	Potential Yield, AF/year	Potential Yield, gpm
A	II	400'	200'	1,389*	695	430
B	III	400'	250'	373	186	115
C	IV	400'	250'	245	123	75
D	IIA	100'	50'	631	80	50

*Recharge reduced by groundwater extracted at Location D if wells are developed at both locations



concentrations of these elements. Even if the entire groundwater supply was found to be unsuitable for domestic uses, it could still be used for irrigation or snowmaking.

WATER DEMAND

Water demand is divided into three major categories: domestic use, irrigation, and snowmaking.

Domestic Use Domestic demands occur mainly during the winter season, and include water for direct human consumption, toilet facilities, food preparation, and cleaning. It is projected that this demand will be 10 gpd per person, and that well supply sources and storage facilities should be sized to provide 200% of the projected peak daily demand.

Domestic water supplies can feasibly be developed at the downstream end of any of the four drainage subareas noted above.

For Snowcreek-based alternatives, it may also be possible to connect with existing MCWD facilities. According to MCWD officials, local water shortages preclude the agency from committing water supplies to Sherwin at this time. However, they are searching for new supplies to keep pace with expected town growth. The MCWD Water Management Plan, currently being completed, includes planning for the needs of 8,000 Sherwin skiers while they are at town locations other than the ski area.

Snowcreek-based alternatives could also make use of the facilities developed for the adjacent Snowcreek resort. Cooperative use of joint facilities at Snowcreek Base could reduce the cost of the domestic and fire prevention supply by up to 50%, and could eliminate or significantly reduce the cost of well installation and pumping equipment for irrigation and snowmaking systems. These potential cost reductions have not been considered in the summaries, but such joint use is considered feasible and practical.

Water supplies should be developed adjacent to the major lodges, from which water can be piped to satellite facilities. Water conservation, a primary concern at all ski areas, should be exercised at Sherwin to the maximum extent possible. Refer to Figure 2 for specific supply data for each alternative.

The possibility exists that irrigation water from Sherwin could be supplied to the community after revegetation is completed, sometime around the second year following build-out. This would occur only if the potentially large resources identified in the hydrologic studies were found, and if they were of potable quality.

FIGURE 2: DOMESTIC WATER DEMANDS

Alt #	Major Lodges	Design PAOT	Peak Daily Water Demand, gpd	Well Supply Capacity	Storage Volume, gallons	Total Season Days	Skiers, 55% Util	Avg Daily PAOT	Avg Daily Demand, gpd	Annual Domestic Demand AF/year
I	SC	4,280	42,800	60	85,600	123	253,496	2,060	20,600	7.78
II	SC	8,560	85,600	120	171,200			4,340	28,226	12.73
	Canyon	4,280	42,800	60	85,600	147	638,180	2,170	14,114	6.37
									42,340	19.10
III	SC	12,840	128,400	180	256,800			6,440	42,933	19.77
	Canyon	6,420	64,200	90	128,400	150	965,729	3,220	21,467	9.88
									64,400	29.65
IV	MX	4,280	42,800	60	85,600			2,150	14,333	6.60
	Canyon	2,140	21,400	30	42,800	150	322,510	1,075	7,167	3.30
									21,500	9.90
V	MX	8,560	85,600	120	171,200			3,820	25,467	13.68
	Canyon	4,280	42,800	60	85,600	175	668,819	1,910	12,733	6.84
									38,200	20.52
VI	MX	12,840	128,400	180	256,800			6,475	43,167	20.00
	Canyon	6,420	64,200	90	128,400	151	977,708	3,237	21,583	10.00
									64,750	30.00
VII	SC	8,560	85,600	120	171,200			4,420	29,467	12.84
	Canyon	4,280	42,800	60	85,600	142	637,417	2,210	14,733	6.42
									44,200	19.26

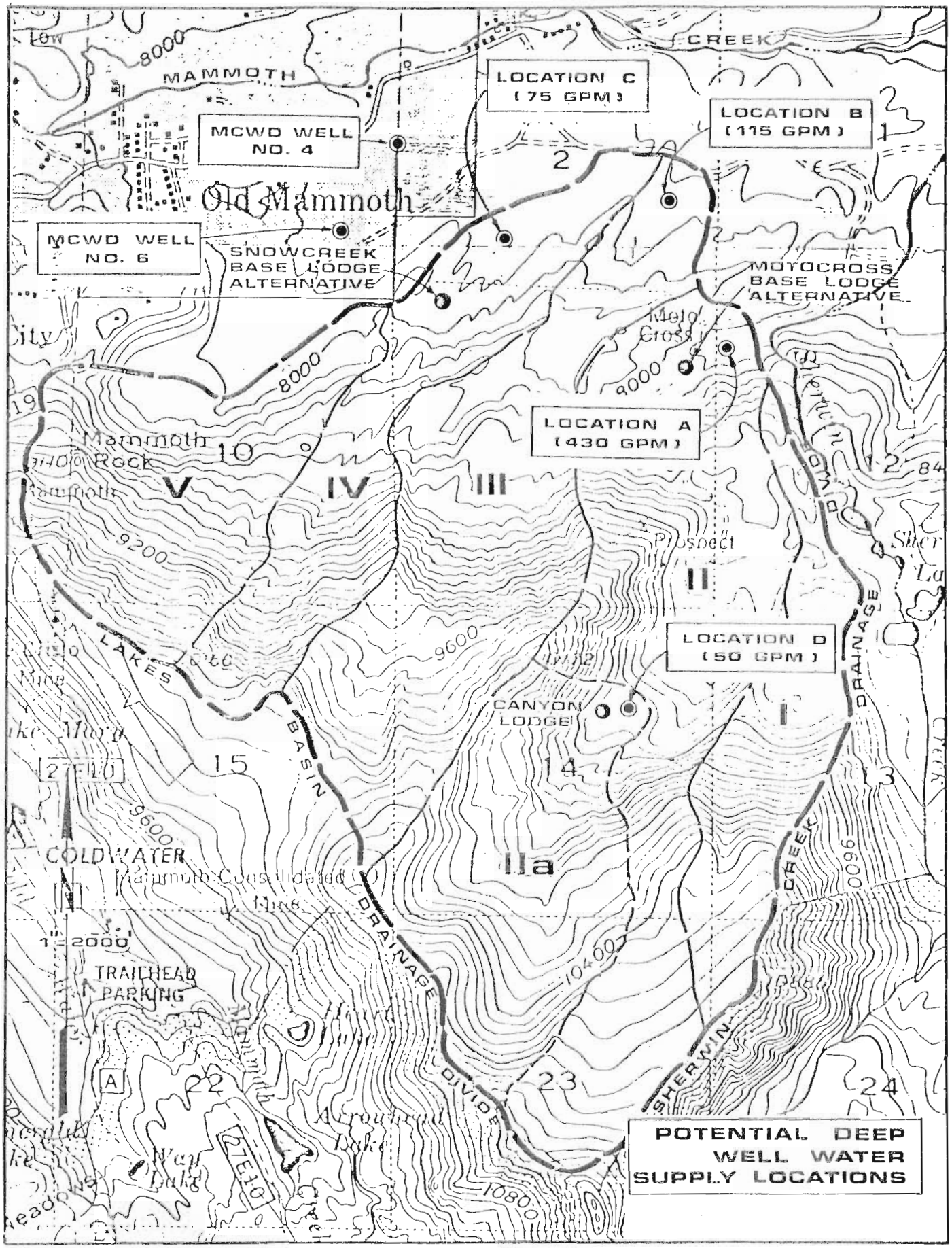

LOCATION C
(75 GPM)
LOCATION B
(115 GPM)
MCWD WELL
NO. 4
Old Mammoth
MCWD WELL
NO. 6
SNOWCREEK
BASE LODGE
ALTERNATIVE
MOTOCROSS
BASE LODGE
ALTERNATIVE
LOCATION A
(430 GPM)
LOCATION D
(50 GPM)
CANYON
LODGE
COLDWATER
TRAILHEAD
PARKING
1" = 2000'
POTENTIAL DEEP
WELL WATER
SUPPLY LOCATIONS

FIGURE 3: ANNUAL VEGETATIVE CONSUMPTION

Year	Consumptive Use Inches per day	Consumptive Use gpd per acre	Irrigation Efficiency	Irrigation Required, gpd/acre
First	.12	3,260	0.80	4,075
Second	.08	2,172	0.75	2,896
Third	.04	1,086	0.75	1,448
Fourth	*	*	*	*

* Irrigation only necessary to enhance poorly established areas and/or to supplement natural precipitation

Irrigation Revegetating disturbed and exposed soil surfaces is an essential erosion control measure. Despite high winter precipitation, the Sherwin site tends to be arid in the summer, with relatively frequent drought conditions. Even when climate-adapted plants are used, it is necessary to irrigate the revegetated areas until they are successfully re-established (two to four years), and during dry years. Estimated peak demands are 4,000 gpd per acre, declining to less than one-third this number by the third year. Figure 3 shows typical use requirements, based on information from Mammoth Mountain Ski Area.

The amount of disturbance and revegetation that will take place in each pod was calculated by USFS winter sports specialists, and is presented in Figure 4.

FIGURE 4: SOIL DISTURBANCE AND REVEGETATION FACTORS

Pod	Soil Disturbance skiable terrain, %*	Revegetation of skiable terrain, %*
A	5	2
B	40	6
C	1	0
D	100	50
E	75	75
F**	20	10
G	5	2
H	40	40
I	30	15
J	30	0
K	5	0
L	100	100
M	5	2
N	5	2
O	100	100

* % of skiable terrain within the general pod area

** Pod F for Alternative VII has the same disturbance/ revegetation figures as Pod H.

Combining unit irrigation requirements, soil disturbance and revegetation factors and skiable terrain area within each pod results in the estimated irrigation demand for each development alternative, as shown in Figure 5. It is important to note that all disturbed acreage that could be revegetated would be, and that the percentages in the table are only estimates. It should also be noted that irrigation does not require the same water quality as the domestic supply.

Snowmaking Water volumes for snowmaking vary with temperature, altitude, and type of equipment used. High-pressure air-injected systems use about 4.5 gallons per cubic foot of snow, or 200,000 gallons for one acre-foot of snow. The high water use, along with expense of operating the equipment, means that snowmaking is kept to a bare minimum at most ski areas. At Sherwin, the great majority of snowmaking activity would occur during a two to three week period at the beginning of the season to facilitate early ski area opening.

Snowmaking in the study area is practical only on the lower slopes that provide access to the base lodges. Depending on the alternative, affected pods may include D, E, F, L or O. Preliminary studies indicate that a maximum of 2.5 feet of snow can be produced economically in a five-day operation in November or December to improve early snow conditions.

Total snowmaking water demands for each alternative are summarized in Figure 6. The large amounts of water needed to produce 6" of snow per day make it necessary to develop water storage facilities that will hold approximately the entire demand. The total storage acerage in the table is based on an average depth of six feet. Snowmaking water supplies do not have to be of the same quality as domestic water.

The feasibility of snowmaking at Sherwin has not been determined to date, and is therefore not included in the total water demand or in the conclusions of the economic analysis.

STORAGE & DISTRIBUTION

Two separate systems have been designed for each alternative--one for domestic use and one for snowmaking/irrigation. All water supply systems will be developed solely for the ski area.

Domestic The siting of domestic wells is dictated by the locations of the lodges that will be using the water. Where they appear, the Snowcreek, Canyon and Motocross lodges are equipped with nearby wells and storage tanks. Facilities at Fingers are served by a pipeline from the Snowcreek well, or from MCWD sources. Solitude Lodge buildings

FIGURE 5: IRRIGATION WATER DEMANDS

Alternative	Development Phase	Terrain Area, acres	Disturbed Area, acres	Revegetated Area, acres	Maximum* Demand, gpd	Maximum Annual* Demand, AF/year
I	1	221	61	27	110,025	40.5
	2	88	27	25	101,875	37.5
		309	88	52	180,067	66.3
II	1	193	56	24	97,800	36.0
	2	181	42	30	122,250	45.0
	3	181	51	31	126,325	46.5
	4	159	45	29	118,175	43.5
		533	143	83	239,807	88.3
III	1	231	68	25	101,875	37.5
	2	222	58	45	183,375	67.5
	3	218	37	32	130,000	48.0
		852	214	133	321,536	118.4
IV	1	150	50	35	142,625	52.5
	2	110	24	22	89,650	33.0
		260	74	57	191,010	70.3
V	1	150	50	35	142,625	52.5
	2	237	55	35	142,625	52.5
	3	131	27	13	52,975	19.5
		518	132	83	243,985	89.9
VI	1	161	52	33	134,475	49.5
	2	250	59	37	150,775	55.5
	3	152	29	14	57,050	21.0
	4	223	61	57	232,275	85.5
		786	201	141	374,179	137.8
VII	1	266	96	39	158,925	58.5
	2	124	50	42	171,150	63.0
	3	119	29	14	57,050	21.0
		509	175	95	284,094	104.6

* "Total" maximum demand is not the sum of each phase because demands occur in different years.

receive water pumped uphill from the Canyon Lodge source.

Irrigation, Snowmaking, & Fire Flows Since irrigation and snowmaking never occur simultaneously and have similar storage requirements, it is generally practical to combine the major supply, transmission and storage facilities for these two uses. Water volumes for fire protection of major structures can also be economically supplied from the irrigation/snowmaking storage facilities.

The high resource potential that exists in the Motocross area makes it the most likely source of snowmaking/irrigation/fire protection water for any alternative. Gravity pipelines for fire flows are practical at either base lodge site, due to their low elevations, though booster pumps will be needed for fire protection at Canyon Lodge.

The topography of drainage subareas II, III and IV includes numerous natural basins and sump areas. These natural water impoundments are ideal locations for surface water storage lakes or ponds. The basins have a potential capacity of over 200 acre-feet, at average depths of five to six feet. Since the surface soils are highly permeable, it would be necessary to line the ponds with impervious material. The size of the ponds may be limited by economic considerations; construction and earthwork costs can be reduced by careful site selection. Lakes or ponds developed with sensitivity to the surrounding terrain could be a positive influence on adjacent wildlife and migrating deer.

Steel water storage tanks, as used on Mammoth Mountain, may ultimately cause less environmental and economic impact, and should be weighed against the development of lakes and ponds. If strategically located, the tanks could provide a significant storage resource for the MCWD when irrigation storage for ski area revegetation is no longer needed.

WATER QUALITY & SEWAGE

The Lahontan Regional Water Quality Control Board has prohibited the following:

—Discharge of waste (including sewage effluent) to surface water in the Owens River and its tributaries upstream of Crowley Lake above 7,200' elevation.

FIGURE 6: SNOWMAKING WATER DEMANDS

Alternative	Snowmaking Area Pod	Acerage	Snowmaking Demand MG/day	MG/week	Annual Demand, AF per year	Required Storage, in acres
I	D	43	4.3	21.5	66.0	11
	E	32	3.2	13.0	49.1	8
		75	7.5	37.5	115.1	19
II	D	40	4.0	20.0	61.4	10
	E	24	2.4	12.0	36.8	6
	F	17	1.7	8.5	26.1	5
		81	8.1	40.5	124.3	21
III	D	42	4.2	21.0	64.4	11
	E	44	4.4	22.0	67.5	11
	F	17	1.7	8.5	26.1	5
	L	28	2.8	14.0	43.0	7
		131	13.1	65.5	201.0	34
IV	E	27	2.7	13.5	41.4	7
V	D	23	2.3	11.5	35.3	6
	E	30	3.0	15.0	46.0	8
		53	5.3	26.5	81.3	14
VI	D	23	2.3	11.5	35.3	6
	E	29	2.9	14.5	44.5	8
	L	44	4.4	22.0	67.5	11
		96	9.6	48.0	147.3	25
VII	D	48	4.8	24.0	73.7	12
	E	26	2.6	13.0	39.9	7
	O	6	0.6	3.0	9.2	2
		80	8.0	40.0	122.8	21

—Discharge of all waste within the Mammoth Creek watershed above 7,650' elevation, specifically including the Town of Mammoth Lakes.

—Discharge of waste from new leaching or percolation systems in the Mammoth Creek and Sherwin Creek watersheds upstream from the confluence of the two creeks.

The subsurface geology of the Mammoth Basin includes erratic fissures and fractures that undermine the ability of soil layers to filter wastes, and can possibly direct waste discharges into surface or groundwaters. The above prohibitions ensure that all domestic wastes generated in the upper Mammoth Basin, with the exception of a few "grand-fathered" cases, are transported to the Mammoth County Water District (MCWD) reclamation facility for treatment. This facility, located at 7,640', is a modern secondary-level treatment plant capable of producing 2.2 million gallons of stable, oxidized effluent per day. From the plant, treated effluent is transported three miles downstream to Laurel Pond for percolation and evaporation. The MCWD system is the only available method of waste disposal for the Sherwin ski area.

Domestic wastewater discharges for the proposed ski area are projected to average 95% of domestic water use. Anticipated flows for each alternative are summarized in Figure 7.

The recommended sewer connections for each alternative are as follows:

Alternative I Sewer facilities are required at Snowcreek Base, Fingers Station, and the maintenance garage. Fingers Station would connect with Snowcreek Base, which in turn would connect with existing lines at Old Mammoth Road. The garage would require a pump station and connect with the Snowcreek Base line.

Alternative II Sewer facilities are required at Snowcreek Base, Fingers Station, Canyon Lodge, Solitude Lodge and the maintenance garage. Fingers would connect directly with Snowcreek Base; Solitude Lodge would connect with Canyon Lodge, from which a pipeline would be routed down through the Motocross area and over to Snowcreek Base. From Snowcreek Base, the main line would then connect with existing lines at Old Mammoth Road. The garage would require a pump station and connect with the Snowcreek Base line.

Alternative III would use a system similar to Alternative II, discussed above.

Alternative IV Sewer facilities are required at Motocross Base, Canyon Lodge and the maintenance garage. Canyon Lodge

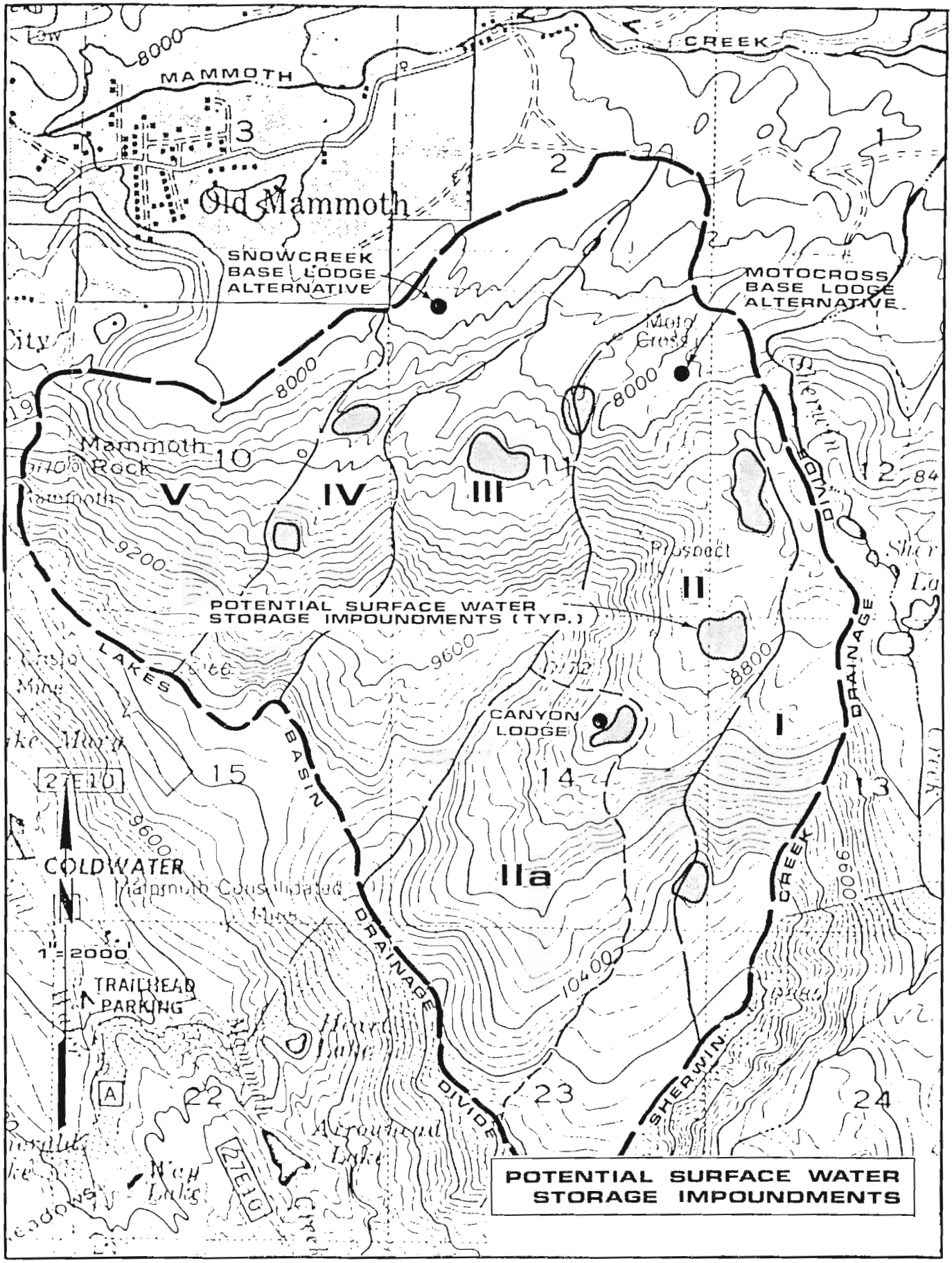

MAMMOTH
CREEK
Old Mammoth
SNOWCREEK BASE LODGE ALTERNATIVE
MOTOCROSS BASE LODGE ALTERNATIVE
Mammoth Rock
POTENTIAL SURFACE WATER STORAGE IMPOUNDMENTS (TYP.)
CANYON LODGE
LAKES BASIN DRAINAGE
SHERWIN CREEK DRAINAGE DIVIDE
COLDWATER
1" = 2000'
TRAILHEAD PARKING
POTENTIAL SURFACE WATER STORAGE IMPOUNDMENTS

FIGURE 7: DOMESTIC WASTEWATER QUANTITIES

Alternative	Major Lodges	Design PAOT	Max Daily Discharge, gpd	Avg Daily PAOT	Avg Daily Wastewater Flow, gpd
I	Snowcreek	4,280	40,660	2,060	19,570
	Garage	50	1,250	20	500
					20,070
II	Snowcreek	8,560	81,320	4,340	27,500
	Fingers	2,500	23,750		
	Canyon	4,280	40,660	2,170	13,730
	Solitude	1,000	9,500		
	Garage	50	1,250	20	500
					41,730
III	Snowcreek	8,560	81,320	6,440	40,790
	Fingers	4,280	40,660		
	Canyon	6,420	60,990	3,220	20,390
	Solitude	1,000	9,500		
	Moraine	1,000	9,500		
	Garage	50	1,250	20	500
					61,680
IV	Motocross	4,280	40,660	2,150	13,625
	Canyon	2,140	20,330	1,075	6,800
	Garage	50	1,250	20	500
					20,925
V	Motocross	8,560	81,320	3,320	21,030
	Canyon	4,280	40,660	1,410	8,930
	Solitude	1,000	9,500		
	Fingers	2,500	23,750	1,000	6,330
	Garage	50	1,250	20	500
					36,790
VI	Motocross	8,560	81,320	3,320	32,055
	Canyon	6,420	60,990	1,745	20,525
	Solitude	1,000	9,500		
	Fingers	4,280	40,660	1,410	8,930
	Moraine	1,000	9,500		
	Garage	50	1,250	20	500
					62,010
VII	Snowcreek	8,560	81,320	4,420	27,990
	Canyon	4,280	40,660	2,210	14,000
	Solitude	1,000	9,500		
	Garage	50	1,250	20	500
					42,490

would connect with Motocross Base, which in turn would connect with the existing lines at Sherwin Creek Campground. The garage would connect with the existing Sherwin Creek Campground line.

Alternative V Sewer facilities are required at Motocross Base, Canyon Lodge, Solitude Lodge, Fingers Station and the maintenance garage. Solitude Lodge would connect with Canyon Lodge, which would connect with Motocross Base. From the base, the line would continue to connect with existing lines at Sherwin Creek Campground. Fingers Station would be connected with existing lines at Old Mammoth Road. This line has a high cost, since it must run all the way to Old Mammoth Road for one small facility alone. The maintenance garage would connect with the existing Sherwin Creek Campground line.

Alternative VI would use a system similar to Alternative V, discussed above.

Alternative VII Sewer facilities are required at Snowcreek Base, Canyon Lodge, Solitude Lodge and the maintenance garage. Snowcreek Base is about 1,000' closer to Old Mammoth Road than under Alternatives I-III, and the sewer connection will be used jointly by the ski area and the Snowcreek Village developer. The garage would require a pump station and connect with the Snowcreek Base line.

Solitude Lodge would connect with Canyon Lodge, which would be served by a line descending into the Motocross area and returning to Snowcreek Base. From the base, the line would continue via Snowcreek Village to Old Mammoth Road.

EROSION & RUNOFF

The Lahontan RWQCB has designated Mammoth Lakes as an area where urban runoff controls are needed, due to potentially significant water quality problems posed by silt and sediment from disturbed soil surfaces. Specific erosion control guidelines adopted in 1983 require that a wastewater discharge report be submitted for all development or construction projects involving areas over a quarter acre in size.

The potential impacts of runoff and sedimentation associated with the ski area are minimal due to the area's topography, porous soils, and lack of natural surface drainage. All drainage subareas end in very flat grasslands or in topographic basins. Though drainage subarea V is tributary to an environmentally sensitive area that includes the upper Arcularius meadow, this is the least disturbed subarea under all alternatives.

Natural runoff is the result of summer rainstorms and runoff from rapid snowmelt due to rapid temperature rise or rain on the snowpack. The watershed sediment yield under natural conditions is estimated at .20 tons/acre. Background runoff and sediment loads for the Sherwin site are summarized in Figure 8.

Soil disturbance and compaction, tree and plant removal, road construction, utility trenches and trails all contribute to increased runoff. Though some of this increase is temporary until the disturbed areas are stabilized, most is relatively permanent. In general, increases in runoff are proportional to the area of disturbance and the amount of revegetation and stabilization undertaken. Projected runoff increases under average, 20-year, and 50-year precipitation events are presented in Figure 9. Figure 10 shows projected sediment loads.

FIGURE 8: BACKGROUND RUNOFF AND SEDIMENT LOAD

Drainage Subarea	Area acres	Avg snowmelt, cfs	20-year storm, cfs	50-year storm, cfs	Annual runoff, AF/year	Background Sediment Load, Tons/year
I	258	3.0	2.9	4.5	43	52
II	1,262	12.0	12.5	19.7	171	252
III	626	5.0	6.6	10.2	72	125
IV	373	2.0	3.4	5.4	29	75
V	476	3.0	5.3	8.4	44	95
Totals	2,995	25.0	30.7	48.2	359	599

FIGURE 9: PROJECTED SURFACE RUNOFF

Alternative	Disturbed area, acres	Revegetated area, acres	Runoff w/o revegetation, cfs			Runoff w/reveg or stabilization, cfs		
			Avg storm	20-year storm	50-year storm	Avg storm	20-year storm	50-year storm
I	88	52	36.1	61.5	79.0	25.7	51.1	68.6
II	143	83	55.4	80.8	98.3	38.8	64.2	81.7
III	214	133	80.2	105.6	123.1	53.8	79.0	96.5
IV	74	57	31.2	56.6	74.1	19.8	45.2	62.7
V	132	83	51.5	76.9	94.4	34.9	60.3	77.8
VI	201	141	75.5	101.1	118.6	47.5	72.9	90.4
VII	175	95	66.6	92.0	109.5	47.6	73.0	90.5
Background	--	--	25	30.7	48.2	25	30.7	48.2

FIGURE 10: PROJECTED SEDIMENT LOADS

Alternative	Without Erosion Control	With Control	Background
I	736	660	599
II	815	698	599
III	916	747	599
IV	716	650	599
V	799	690	599
VI	879	738	599
VII	860	720	599

Although the Sherwin site is essentially ideal from an erosion control standpoint, every effort should be made to minimize the effects of soil disturbance. Control measures are most critical during construction. They include:

—Avoiding unecessary soil disturbance by clearly defining access roads and trails used by heavy equipment

—Flush-cutting trees, and leaving the stumps in place

—Leaving shallow understory and ground cover wherever possible

—The use of filter fences, hay bale barriers, and other temporary siltation facilities throughout the construction period

—Construction of temporary drainage conveyance installations and siltation basins to protect downstream areas in the event of unexpected storms

—Permanent stabilization and revegetation measures, implemented as soon as possible following construction.

In general, the recommendations of the Mammoth Lakes Master Storm Drain Plan, the Lahontan RWQCB Guidelines for Erosion Control, and the experience gained from the MMSA Erosion Prevention Plan should be incorporated into the Sherwin construction plan. A comprehensive drainage and erosion control plan should be submitted before any clearing, grading or construction work begins. A waste discharge permit should be obtained from the Lahontan RWQCB following submission of the erosion control plan and report.

Long-term runoff control after the construction period includes these measures:

—Immediate stabilization and revegetation following construction, using seed and fertilizer mixtures, rates of application, and revegetation procedures recommended by the USFS. All straw mulch should be mechanically stabilized by punching into the soil (see Vegetation section for information on mulching).

—Limiting permanent access roads to 17% grade, and installing water bars or interceptor dikes

—Limiting cut and fill slopes to a 2:1 steepness, and benching all slopes greater than 10' high

—Rounding and contouring roadway and other permanent earth slopes wherever possible. A diversion ditch should be installed at the top of all cut slopes, and drainage should be directed away from fill slopes.

—Avoiding drainage concentrations, or lining channels with culvert or rock

—Using gravel-filled percolation basins or infiltration trenches to dissipate concentrated drainage from paved or impervious surfaces

—Installing permanent sedimentation or siltation basins at the downstream ends of natural and disturbed drainage concentration. Natural topographic depressions should be used where possible.

—Installing a complete irrigation system with adequate capacity to ensure germination, growth, and maturity of the revegation mixture.

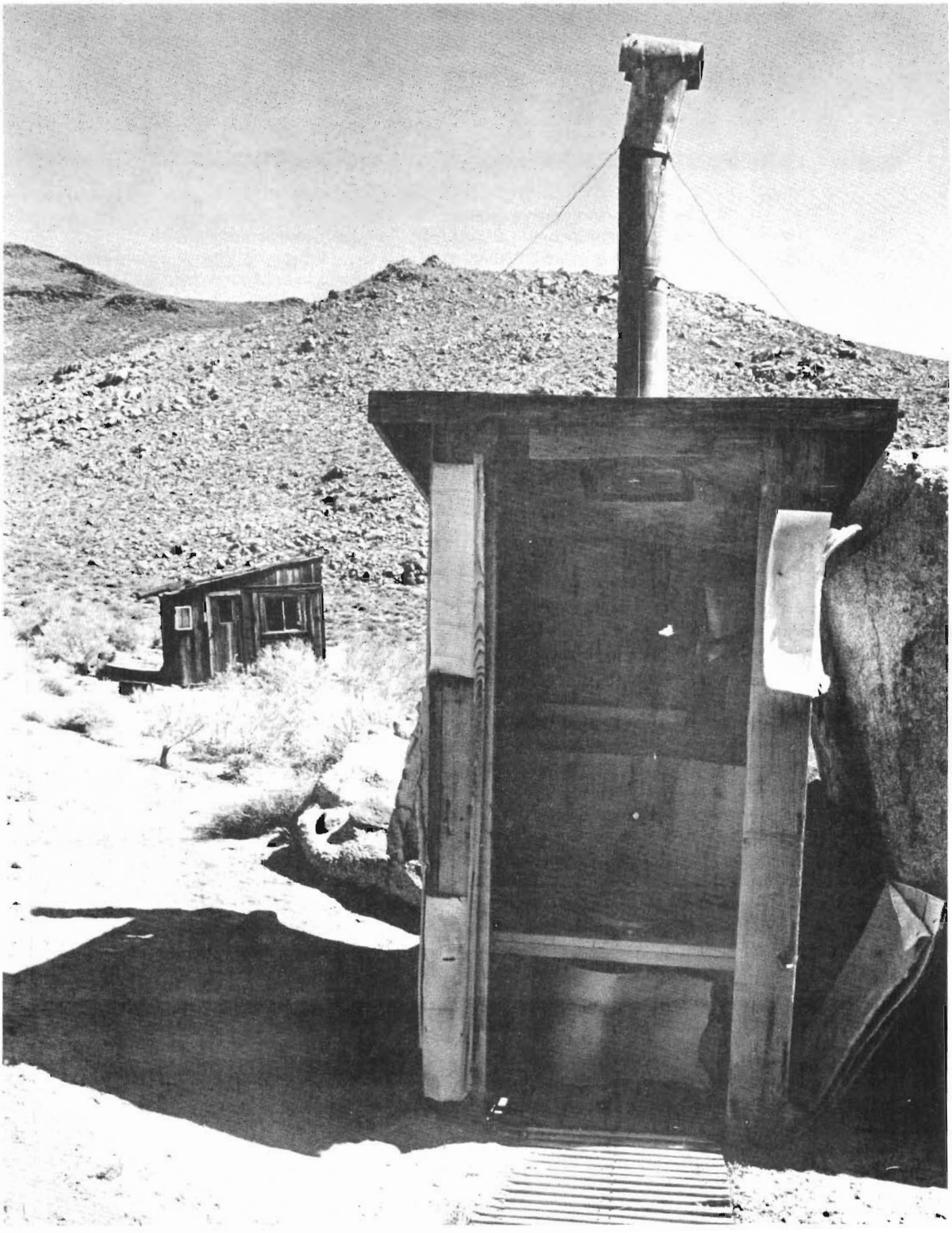
In stressing the need for adequate revegetation, the effects of the irrigation runoff should also be considered. In general, irrigation return flows are of concern only where there is continuous large-scale agriculture, or where the drainage system is confined or has little annual recharge. Projected maximum irrigation return from ski area revegetation, assuming 70% irrigation efficiency and a 12,000-SAOT alternative, is about 41.3 acre-feet per year.

Fertilizers would be used only during initial seed germination, and are therefore these loads are a one-time event. Projected annual TDS and NO3-N loads are 1.7 and .28 tons, respectively.

Though the projected irrigation return waste loads are relatively insignificant, Mammoth Creek's status as a regional water resource makes the stream's water quality a sensitive issue. Small amounts of nutrients can promote algae and other nuisance aquatic weeds. Careless use of pesticides, herbicides, and other chemicals could have both immediate and long-term effects on water quality.

Potential mitigating factors include the lack of perennial or surface streams in the ski area watershed, due to the area's porous surface soils; the moderate grades, grasslands, and depressions, which discourage runoff; the distance of Mammoth Creek from the potential areas of revegetation or irrigation (over a mile, at moderate 2% to 8% grades); and the extremely variable precipitation pattern of the area, which causes rapid "turnover" and replenishment in the hydrologic system. In addition, fertilizer use is limited to initial mulching and seeding, and will not be repeated; and the durable, acclimated ground cover desired should not require the use of pesticides or herbicides.

Further mitigation measures can be undertaken. Fertilizers should be used in the fall months to allow chemicals to dissolve and seep into the soil. Their used should be avoided during the spring and summer runoff. Pesticide and herbicide use is indicated only when absolutely necessary to prevent infestation, or by recommendation of the USFS, and only during the dry summer months. Irrigation should be on a periodic basis, according to a defined rotation schedule that allows for soil absorption. Overwatering should be avoided.



3 VEGETATION

The study area comprises a diverse mosaic of the plant communities typical of the Eastern Sierra, including representatives of the Upper Sonoran, Transition, Canadian, and Hudsonian life zones. Slope, elevation and soil conditions determine the location of the various communities, which include:

Whitebark Pine Forest Nearly 50% of the area is vegetated with whitebark pine forest, with a crown cover of 12% and an average basal area of 171 square feet per acre.

Mixed Conifers Another 30% of the area is mixed conifer forest, including Jeffrey pine, white and red fir, and lodgepole pine. The crown cover averages 23% and basal area is 220 square feet per acre.

The remaining 20% comprises (in order of relative abundance):

Sagebrush Scrub/Chapparal This community is dominated by sagebrush, bitterbrush, and tobacco bush.

Mixed Brush Located on steeper slopes than the sagebrush communities, this includes bittercherry, manzanita, heath, tobacco bush, ribes, chinquapin, sagebrush, bitterbrush, snowberries, creamberry, mountain mahogany, twinberry and rabbitbrush. Quaking aspen and willow grow where the water table is high.

Montane Scrub occurs above the bowls, and consists primarily of mountain mahogany, tobacco bush and currant.

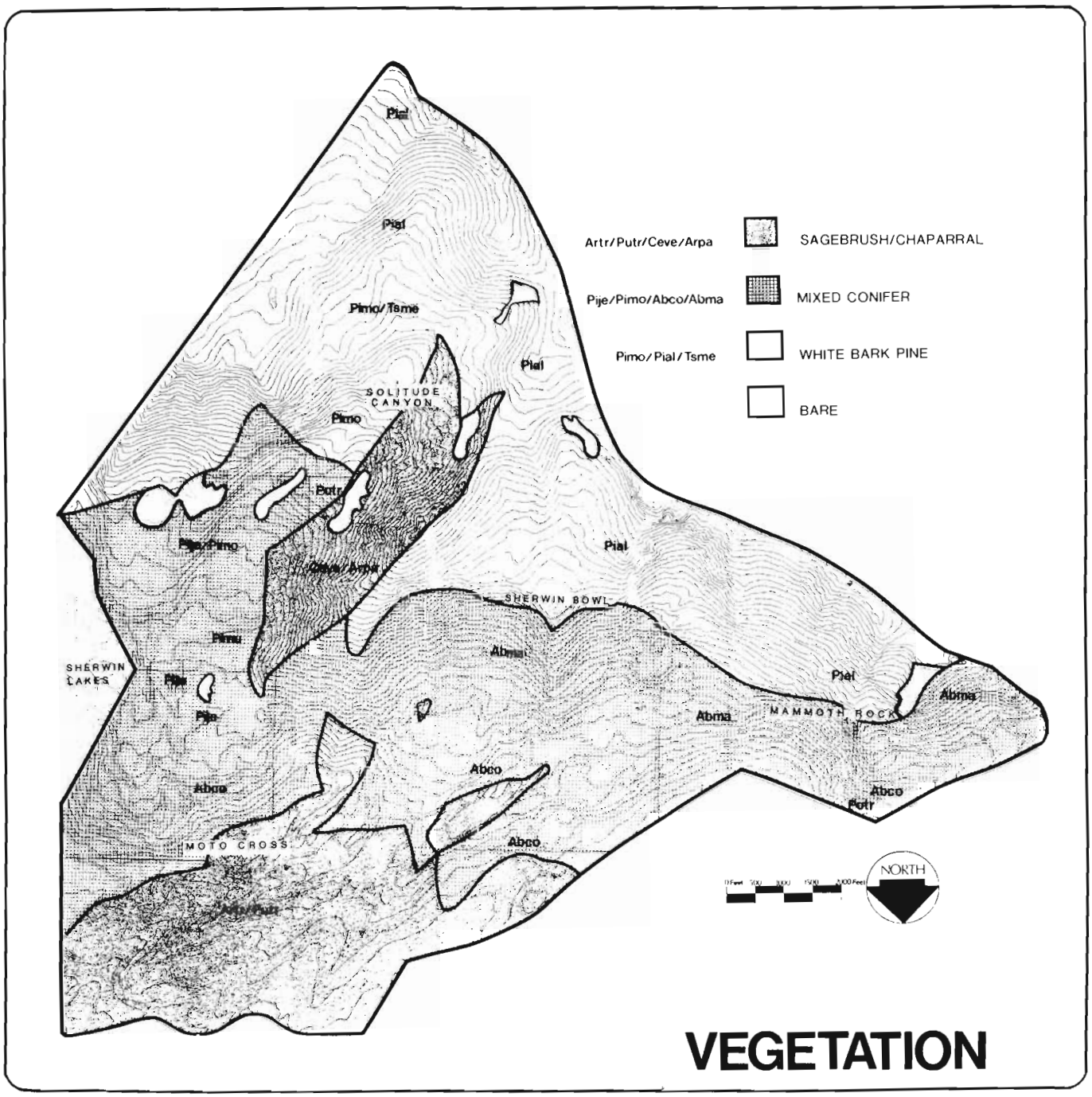
Barren Areas occur above timberline.

Ground cover ranges from less than 10% in the upper forested areas to over 70% in the sagebrush scrub/chaparral communities on the lower slopes. The above brush communities are important to the deer herd that migrates through the project area in spring and fall. More specific data on these communities is presented in the accompanying table.

No evidence of sensitive plant species was found during the preliminary survey conducted by USFS wildlife biologist Carroll Albert. However, USFS records on the area indicate that it is a possible habitat for *Eriogonum ampullaceum* , which prefers dry hill slopes with sandy loam or pumice soils; and *Sedum pinetorum*. The USFS recommends that areas that will likely be disturbed during development be searched for these plants before construction activity begins.

Species	Absolute Cover	Relative Cover	Density	Frequency	Average Height	Browse* Value
SAGEBRUSH SCRUB/CHAPARRAL						
Artemesia tridentata	31%	16%	.06	100%	19"	2-4
Purshia tridentata	19%	12%	.04	100%	17"	1
Chrysothanmus sp.	14%	7%	.03	100%	11"	3-4
Ceanothus velutinus	12%	9%	.02	100%	31"	3
MIXED BRUSH						
Ceanothus velutinus	14%	8%	.04	40%	21"	3
Arctostaphylos patula	10%	12%	.05	26%	20"	3-5
Artemisia tridentata	9%	11%	.03	18%	19"	2-4
Purshia tridentata	8%	10%	.02	15%	21"	1
Prunus emarginata	8%	9%	.02	14%	29"	1-2

* 1 = Excellent, 2 = Good, 3 = Fair, 4 =Poor 5 = Useless


Artr/Putr/Ceve/Arpa
SAGEBRUSH/CHAPARRAL
Pije/Pimo/Abco/Abma
MIXED CONIFER
Pimo/Pial/Tsme
WHITE BARK PINE
BARE
SOLITUDE CANYON
SHERWIN BOWL
SHERWIN LAKES
MAMMOTH ROCK
MOTO CROSS
NORTH
Pial
Pimo/Tsme
Pimo
Potr
Pije/Pimo
Abma
Abco
Artr/Putr

VEGETATION

REVEGETATION

Disturbed areas on the project site would be revegetated wherever possible. Revegetation efforts at Mammoth Mountain Ski Area use a paper-based mulch consisting of crushed newsprint, seed and fertilizer. The MMSA mulch uses five different drought-resistant grass seeds with different germination periods, comprising about 5% of the mixture, and a 27-12-0 pellet fertilizer, comprising 10% of the mixture. The remaining 85% is paper. About 3,000 pounds of mulch, or 150 pounds of seed and 300 pounds of fertilizer, are applied per acre.

The mulch is watered immediately after application. For the first two weeks, revegetated areas are watered two hours each day. The amount and frequency of watering is gradually reduced until, after two years, the plot is watered every three to five days, as needed. At Sherwin, irrigation should occur on a periodic basis, according to a defined rotation schedule that allows for soil absorption and avoids overwatering.

Fertilizers should be used only during initial seed germination, making application a one-time event. Projected annual TDS and NO3-N loads are 1.7 and .28 tons, respectively. Fertilization should take place in the fall months to allow chemicals to dissolve and seep into the soil, and avoided during the spring and summer runoff. Pesticide and herbicide use is indicated only when absolutely necessary to prevent infestation, or by recommendation of the USFS; and only during the dry summer months.

NOISE 3

The noise assessment study, conducted by J.J. Van Houten & Associates, evaluated the existing noise conditions within Mammoth Lakes; projected possible traffic, equipment and construction noise that may be associated with the development of Sherwin Ski Area; and recommended ways to reduce excessive noise impacts where possible.

Traffic Noise Existing traffic noise is within the Community Noise Equivalent Level (CNEL) range from 30-40 decibels (dB) at remote locations within the Sherwin site to 70 dB at areas adjacent to Main Street. The Federal Highway Administration Traffic Noise Model and traffic generation figures for each alternative (see the Transporation study) were used to calculate the additional noise that could be expected. Along existing arterials in commercial areas, the change in noise level is projected to be insignificant—just one or two decibels.

Where Sherwin-bound traffic approaches the Snowcreek Village residential area, however, the noise impact increases. At the average residential setback (50' from the roadway), the total noise level may increase from between one and five dB over current levels. The impact of traffic noise is considered significant when it exceeds a CNEL of 65 dB. Projected noise levels along Snowcreek Village arterials are below this level for 4,000 and 8,000 SAOT alternatives, but exceed it for 12,000 SAOT alternatives.

Equipment Noise Sources of equipment noise include snowplows, snowmobiles, snowmaking equipment, and, to a lesser extent, lift equipment and drive systems.

At 50' from the roadway, snowplow sound levels are estimated to be 90 dB(a)—approximately equivalent to train noise heard from the same distance. The transient nature of snowplow operations means that the annoyance is brief and sporadic, similar to that of trash pick-up. Trucks used to haul snow out of the area will also generate noise.

Snowmobiles are used inside the ski area by operations and safety personnel, and outside the ski area by recreationists in the vicinity of Sherwin Creek Road. The EPA has estimated that a snowmobile traveling at 20 mph produces 50 to 55 dB(a) when heard from 500'. A few planned Snowcreek Village residences will be located 400' from areas of snowmobile and snowcat use within the Sherwin site; these houses should be constructed with extra soundproofing as needed.

Snowmaking, generally a nighttime activity, generates noise levels that can reach 80 dB(a) at 800' from the nozzle. Where line-of-sight exists between the snowmaking machine's nozzle and Snowcreek Village residences, it is likely that noise levels will exceed the generally recognized nighttime sound level standard of 50 dB(a). Noise can be reduced by blocking the line of sight with terrain or other barriers; requiring noise controlling features (mufflers, housings, etc.) on all equipment purchased; designing the residences nearest the ski area with extra noise-resistant features; and limiting snowmaking hours.

The motors that drive ski lift equipment generate 65 to 75 dB(a) at 50'. The equipment is placed at the top of the lift, too far from residences to have any significant noise impact.

Construction Most construction will take place during summer daytime hours. Trucks on the town's roads and earth-moving equipment at the site are projected to be the major nuisances. It is recommended that these movements be minimized before 8 am, and that truck routes attempt to avoid residential areas wherever possible.

3 WILDLIFE

The proposal to develop Sherwin Ski Area initiated concern over the possible effects the project may have on local wildlife. Under the National Forest Management Act of 1976, the USFS is legally mandated to conserve the diversity of plant and animal communities and monitor wildlife population trends when planning land management activities.

Though the USDA conducted a wildlife survey in the Sherwin area in 1981, more extensive information was required to determine:

—the timing, pattern, and intensity of mule deer *(Odocoileus hemionus)* use within the site

—the existence of critical areas, such as fawning or migration sites, within the site

—the presence, relative abundance, and habitats of species defined by the USFS as sensitive, management indicator, special Interest or Harvest species within the site

—potential mitigation measures to be incorporated into the development plan if the ski area proceeds.

A two-year study was conducted by Thomas Kucera under contract from the proponents, with the cooperation of and a Special Use Permit from the USFS Mammoth Ranger District, and the cooperation of the California Department of Fish and Game. Kucera took over the contract in May 1984, and merged this study with a larger investigation of eastern Sierra deer supported by the BLM, Department of Fish & Game, Inyo and Mono Counties, the University of California at Berkeley, and several private funding organizations. The design of the wildlife study is based on consultations with USFS biologists Clint McCarthy and Pat Stygar.

A comprehensive study of environmental factors affecting wildlife in the Sherwin area was conducted by Dr. Fred Glover, Certified Wildlife Biologist and Certified Senior Ecologist, in cooperation with the USFS, the DFG and the proponents. Specific resources that may be affected, such as vegetation, water and soils were analyzed in relation to specific wildlife characteristics and habits.

DEER

METHODS

The study area varies in elevation from 8,000' to 11,600', encompassing an area between the Sherwin Creek drainage on the east and Mammoth Lakes basin on the west. There is no commercial logging in the area. Horses and mules are grazed in a meadow area in the northwest portion of the site.

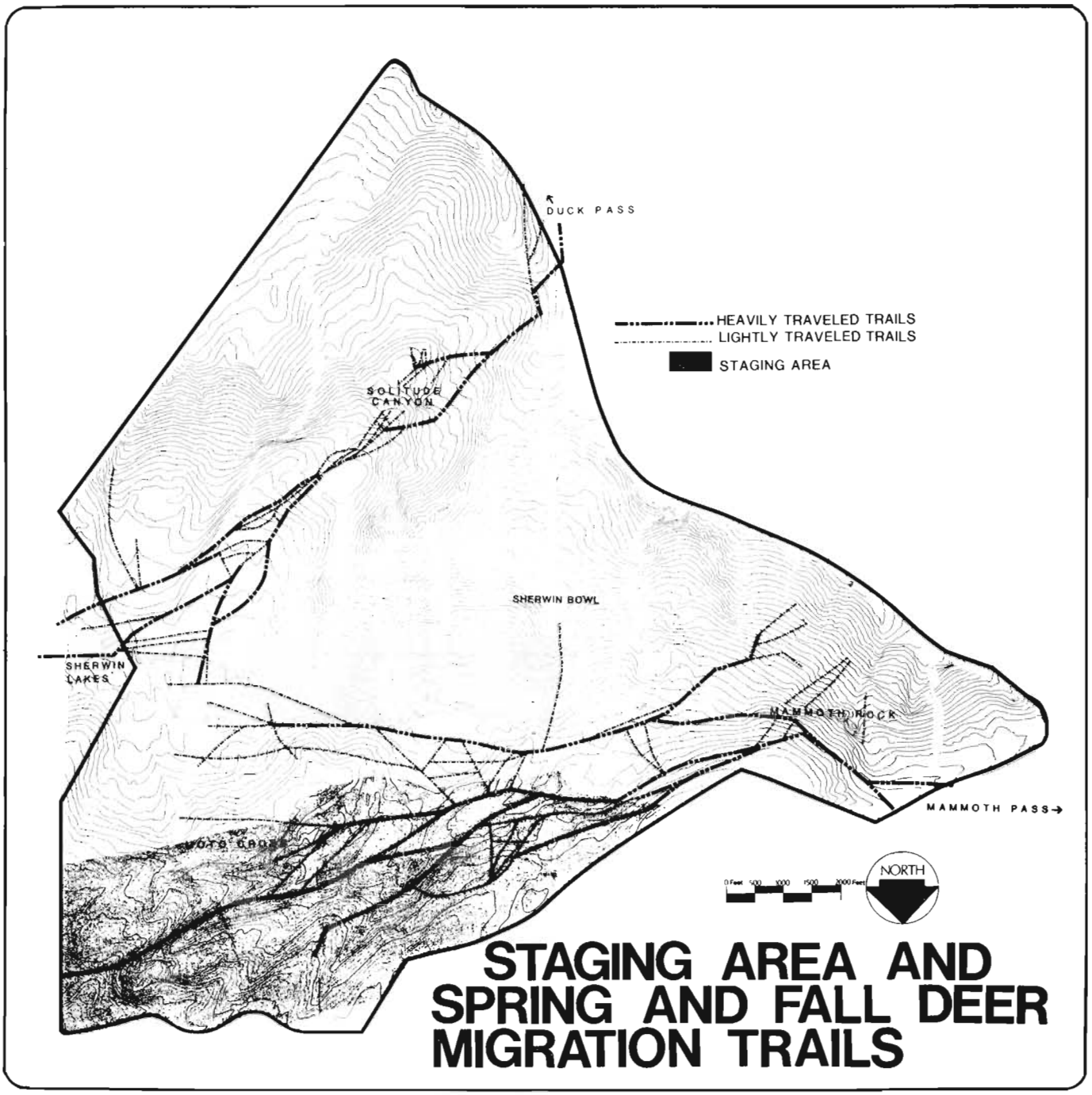
Three methods were used to assess deer presence in the area:

Telemetry During the spring migration in 1984, six does were captured near the study area, fitted with radio transmitter collars provided by the DFG, and released. An additional three were captured and collared in spring 1985. Two hundred twelve deer were captured between January and March 1985 while on their winter range in Round Valley, about 15 miles northwest of Bishop. Of these, 32 were fitted with radio collars, 81 does received numbered marking collars, and all were tagged with numbered ear tags.

The radioed deer were tracked during 37 telemetry flights in DFG aircraft between April 1984 and November 1985. Though flights were taken year-round, they were more frequent during spring and fall migration periods. In addition, numerous day and overnight foot trips were undertaken in summer and fall, and observations of marked deer were noted in the course of daily field work in the area.

Within the study area, it had been planned to monitor deer locations by triangulation. This plan was modified due to the large signal location errors caused by the very steep and rocky terrain. Only visual sightings were considered reliable enough to include in the report. Plans to use the Lincoln Index to estimate summer deer population were also abandoned, because only one marked deer summered in the study area in 1984.

Pellet Transects Thirty randomly located pellet group transects were located in the study area, ten in each of the three vegetation strata within the site. Transects consisted of 10 circular plots, each measuring


DUCK PASS
HEAVILY TRAVELED TRAILS
LIGHTLY TRAVELED TRAILS
STAGING AREA
SOLITUDE CANYON
SHERWIN BOWL
SHERWIN LAKES
MAMMOTH ROCK
MAMMOTH PASS
NORTH
STAGING AREA AND SPRING AND FALL DEER MIGRATION TRAILS

one-four hundredth of an acre in diameter, spaced 50' apart. The plots were marked with a painted rebar stake 3' high. The transects were read monthly, except during winter, and from the number of pellet groups collected in each transect it was possible to calculate the number of deer days per acre per month.

Road & Foot Surveys Between August and October 1984, and April and October 1985, a weekly dawn road survey was taken in and around the study area. A fixed route was followed, beginning 1/2 hour before sunrise; the beginning and ending points were alternated on consecutive trips. The route included Sherwin Creek Road between Old Mammoth and US 395, and included the Motocross area. All deer were counted and classified by age and sex.

Immediately after snowfall and during spring migration, the study area was surveyed on foot. Observed deer were classified and migration trails plotted. An "electronic eye" with an automatic counter, located on a narrow trail known to be used by migrating deer, was checked during these hikes. The trail is not used by humans.

RESULTS

The study found that the deer gradually begin leaving the winter range in Round Valley in early April, congregating for as long as six weeks at a staging area in and around the Mammoth Motocross at the northeast corner of the site. The staging area extends east and south from the study area for several miles, toward Convict Creek. In 1984 and 1985, the first deer were sighted in the staging area on April 20 and April 17, respectively. The animals stay in this area until they are ready to move up to their summer range, generally during May and June.

Trails When migration begins, the deer follow two routes through the study area (see the map on the previous page). One route follows Solitude Canyon to Solitude Pass, then through Mammoth Lakes Basin to Duck Pass and the Fish Creek drainage. Typically, some snow is remaining on the passes when the deer cross. The other route follows the northern boundary of the study area, below Mammoth Rock, to Mammoth Pass and the middle fork of the San Joaquin River. A portion of the Casa Diablo herd may also use this trail.

Summer ranges for the herd extend from Florence Lake on the south to Agnew Pass on the north, a very large area. Very few deer remain in the study area over the summer, possibly because of the aridity, poor forage and relatively high human presence, though one radioed doe summered in the lower elevations of the study area during 1984.

Just after the first major snowfall in autumn, the deer quickly leave the summer range along the same migration routes and return to their winter range near Bishop. Typically, this migration is completed within two weeks. During both study years, this migration was over by late October.

Staging Area The staging areas are located at intermediate elevations, and are characterized by sagebrush/scrub vegetation with scattered white fir and Jeffery pine. Since deer are quite mobile, the boundaries of these areas are not fixed and definite, but may be expected to vary yearly with different weather patterns, snow conditions, and possibly population densities. The area shaded in the Staging Area map represents approximate boundaries, determined by deer presence, sign, and habitat types as observed during the study.

Numbers A spring migration estimate of about 3,000 deer is considered reasonable, or possibly conservative. The fall migration number may be higher, due to the presence of fawns. These estimates are consistent with the road surveys, which sighted between 250 and 600 deer in the staging area every day between mid-April and late May. The count included only the animals that could be seen from the road; many animals present were not visible. The estimates are also consistent with the size of the summer range, which covers hundreds of square miles.

OTHER WILDLIFE

Sensitive species that may inhabit the Sherwin area include goshawks, prairie falcons, spotted owls, great gray owls, red fox, pine martin, and fisher. Flammulated owls, a special interest species, were also noted. No federally listed threatened or endangered species are thought to be present.

METHODS

Diurnal Raptors The presence of goshawks *(Accipiter gentilis)* , a sensitive species, was investigated during four days of field work in late June and early July. Potential habitats were examined as thoroughly as possible for adult goshawks or sign. During the course of other field work, all goshawk observations and sign were recorded. Attempts were made to locate nests when adults were sighted.

Prairie falcons *(Falco mexicanus)*, another sensitive species, were investigated during three days of field work in early June. Potential nesting cliffs were searched for breeding adults or sign of breeding attempts. During the course of other field work, all prairie falcon observations were recorded.

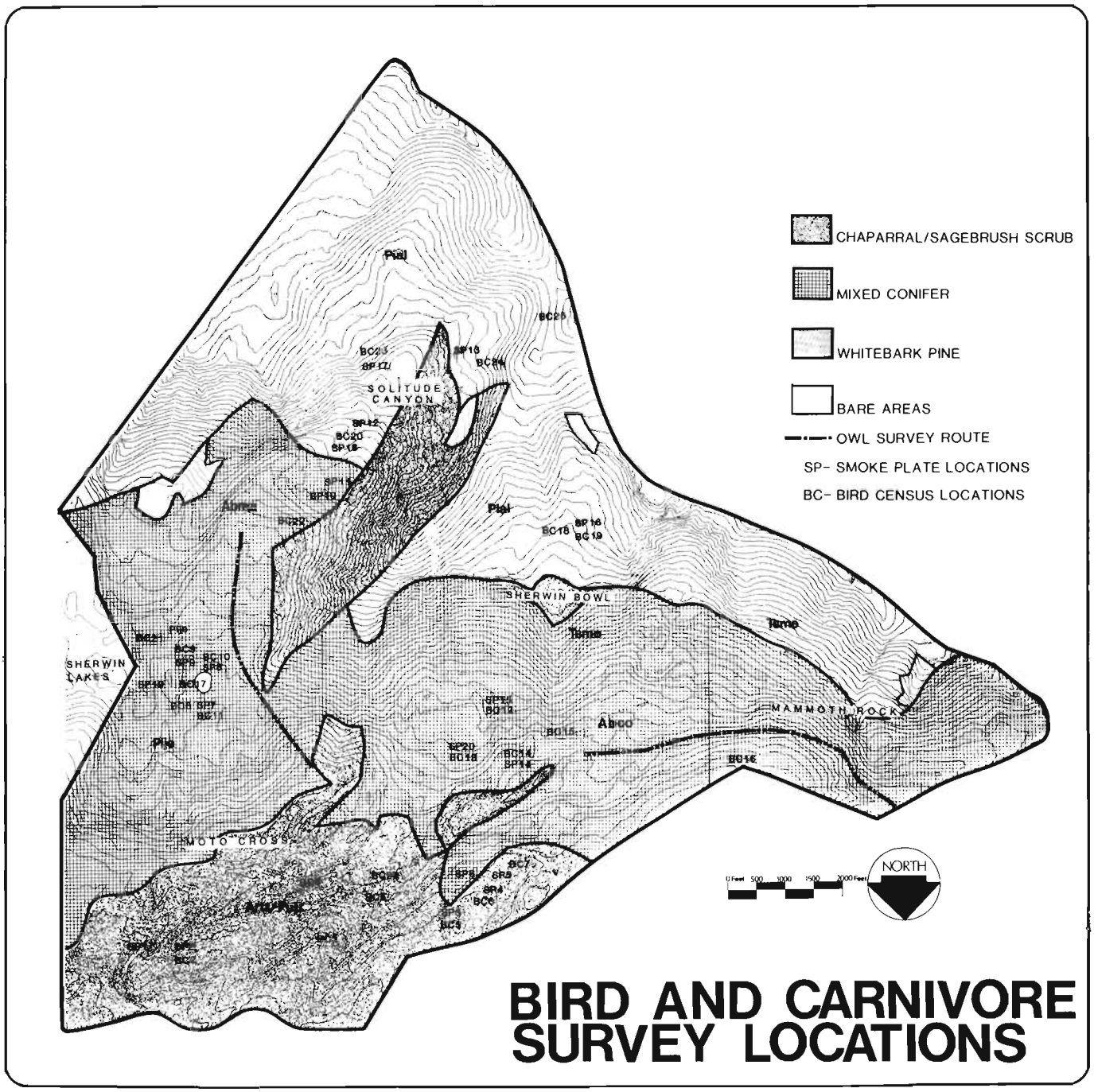
Other raptors, including golden eagles *(Aquila chrysaetos)* and red-tailed hawks *(Buteo jamaicensis)* were noted during the course of other fieldwork in the study area.

Owls Spotted owls *(Strix occidentalis)*, great gray owls *(S. nebulosa)*—both sensitive species—and flammulated owls *(Otus flammeolus)*, a special interest species, were found to be present. Recorded calls were played at night in areas of potential owl habitat identified by the USFS. These areas were visited one night each week during May and June, beginning one-half hour after sunset. The recordings were played at approximately 100m intervals along the transect route, and responses were noted.

Blue Grouse *(Dendragopus obsucurus)*, a harvest species, was sighted and noted during field work.

Other Birds Management indicator avian species, including yellow-bellied sapsuckers *(Sphyrapicus varius)*, Williamson's sapsuckers *(S. throideus)*, hairy woodpeckers *(Picoides villosus)*, pygmy nuthatches *(Sitta pygmea)*, and brown creepers *(Certhia familiaris)* were surveyed by use of a plot technique. Twenty-six plots were selected, based on the vegetation types and deer pellet plots already established.

During late May and June, when breeding birds are most conspicuous, the plot was visited as soon as dawn as possible. A



researcher sat quietly and recorded the number of these species detected (visually or aurally) during 5 successive 10-minute intervals. Other birds and mammals were noted as time allowed. Two plots were visited each day.

Carnivores Sierra Nevada red fox *(Vulpes vulpes necator)*, pine marten *(Martes americana)* and fisher *(M. pennanti)*, all sensitive species, were investigated. In the summer, 20 plots were placed randomly, covering all vegetation types, and read every other day for six days. Plots consisted of a one meter square piece of soot-covered sheet aluminum, with a can of fish with holes punctured in the top placed in the middle. Eleven winter surveys were conducted on skis between February and April 1985. Different routes were followed, and tracks or other sign of the above species were noted. The presence of other wildlife, including coyote *(Canis latrans)* and mountain lion *(Felis concolor)*, was also recorded where appropriate. The habitiat on each plot was described according to standard USFS procedures used in timber compartment exams, in coordination with USFS biologists.

RESULTS

Diurnal Raptors One goshawk was seen at the base of the slope below Mammoth Rock on May 31, 1985, but no other birds were sighted. Prairie falcons were seen on June 6, 1985 along the crest above Mammoth Rock; and on June 30, September 12 and September 20 at the top of Solitude Pass.

Owls A great horned owl was sighted on July 23 and August 15, 1985, about 1/4 mile west of the Motocross.

Blue Grouse were seen and heard commonly throughout the study area.

Management Avian Species observed were yellow-bellied sapsuckers, Williamson's sapsuckers, hairy woodpeckers and brown creepers.

Carnivores Species confirmed were pine marten, coyote, rodents, raccoon, black bear, mountain lion, badger and bobcat. Species considered tentative (inconclusive) were Sierra Nevada red fox, fisher and wolverine.

CONCLUSIONS

The study concluded that the most important wildlife concern by far is the migratory deer. Summer resident deer are rare, and any habitat change resulting in earlier successional vegetation would likely favor them. There are no threatened or endangered species present, and only one sensitive species—pine marten—is present in any appreciable number. Sierra Nevada red fox, fisher, spotted and great gray owls, goshawks and prairie falcons are absent or occur only rarely.

Deer use is concentrated in Solitude Canyon and along the base of the study area, where major migration routes are located. In general, minimizing impact on the deer involves planning to minimize human presence in Solitude Canyon and along the base of the ridge when deer are present; retaining sufficient vegetation for cover and browse; placing permanent structures as far as possible from migration routes; and screening those structures with vegetation or other natural features. A spring migration monitoring system, trail closures during the migration period, and careful, thoughtful facility design can help minimize human impacts.

MITIGATION

As noted in the introduction, Dr. Fred Glover analyzed the wildlife survey and provided comments and recommendations on possible mitigation techniques.

EXISTING ENVIRONMENT

Vegetation A variety of major and minor ecosystems occur in the Sherwin area, due to elevational change. The numerous microenvironments present are attractive to many species of wildlife.

As noted above and in the vegetation report, the site has three major vegetation types: whitebark pine (964 acres), mixed conifer (547 acres) and sagebrush scrub/chaparral (343 acres). Two minor types, quaking aspen (65 acres) and riparian (21 acres) were also identified.

Sagebrush scrub/chaparral, mixed brush, riparian woodland and montane scrub are the most important habitats in the deer migration areas. High value species for the deer are bittercherry *(Prunus emarginata)*, quaking aspen *(Populus tremuloides)*, bitterbrush *(Purshia tridentata)* and mountain mahogany *(Cercocarpus betuloides)*. A limited amount of fawning occurs in the study area between June and July, principally in the mixed conifer and chaparral scrub habitats. The drainages and riparian areas also appear to be critically important to fawning deer.

Habitats most used by other wildlife include Mixed Conifer, used by raptors, owls, blue grouse and carnivores; andWhitebark Pine and Sagebrush scrub/chaparral, both used by blue grouse and carnivores.

Soils Fourteen soils units were recognized and characterized by the USFS and the Morro Group (see Geology & Soils). Three of these (soils units 101, 102 and 105)

are classified has having a low erosion hazard rating for current and disturbed conditions. Soils units 103, 106, 107, 109 and 110 have a low-moderate rating for disturbed conditions. Soil units 108, 112, 115 and the rock glaciers of 103 have moderate-high rating when disturbed. Soils unit 104 was given a very high erosion hazard rating if disturbed. Deer use occurs primarily on soils with moderate to very high erosion ratings and low fertility.

Water Resources Most snowmelt and rainfall is rapidly absorbed by the surface soils and underlying matrices, to become groundwater. Groundwater moves down-slope, and where it surfaces it can be of high value to wildlife. Most of the surfacing occurs near the base of the mountain or behind moraine dams. Varying amounts of groundwater could be available for wildlife habitat revegetation and development, depending on elevation, since lesser amounts occur at higher locations.

Traffic & Roads Three existing roads have an influence on area wildlife, especially deer: Sherwin Creek Road, State Route 203 and US 395. Sherwin Creek Road, a gravel road, is closed during the winter, but usually open during the migration seasons. State Route 203 and US 395 are hard-surfaced roads whose existing traffic volumes lead to a high number of car-deer accidents during migrations (CalTrans, 1985). In 1985, the greatest number of accidents occurred in late April, May and early June—the peak deer migration time in the Mammoth Lakes region. About twice as many does as bucks were killed during this period. The accidents occured most frequently on US 395 between Mammoth Lakes Airport and Hilton Creek Road, and on State Route 203 between the US 395 overpass and the USFS Mammoth Ranger Station.

Recreation The two migration routes through the Sherwin site are well known to hunters, and between mid-September and mid-October, hunting is an important recreational activity. Heavy harvests sometimes occur. Other recreational pursuits that may influence wildlife in the study area are off-road vehicle use (particularly motorcycles, but also four wheel drives and mountain bikes), horseback riding, camping and hiking.

Snow Depths The deer migration study found that around 3,000 deer migrate through the Sherwin site in spring and fall. Deer movement from the winter range into the study area varies from year to year depending on weather conditions, but generally begins in early April when snow is less than 24" deep. Probably fewer than 100 deer remain in the area over the summer. Fall migration from the summer range begins slowly in late August, but typically peaks quickly in early or mid-October. Migration usually ends before the end of October, when snow depths in the high passes are over 36", and snow depths in the valley are 24" or less.

During an average snow year, ski operations could begin in late November and continue until about the end of May. Snowmaking on the lower mountain could be conducted between October and April or May. Snowmaking to depths greater than 24" should not create a barrier to migration, since the snow would be packed hard and the surface would freeze at night, creating a suitable surface for deer travel. Deer do not winter in the study area, moving instead to areas between Mammoth and Bishop.

Avalanches Shortly after the completion of this mitigation study, a number of avalanches occured through and across the migration corridors on the Sherwin site. Though it will be impossible to assess the damage until summer arrives, there is no question that enormous amounts of vegetation, soil and rock were displaced, dramatically altering the appearance of the North Face and upper Solitude Canyon, where critical migration paths exist.

Rehabilitation of affected deer migration corridors, including revegetation, should be among the mitigation actions taken in developing the ski area.

ANALYSIS OF PROPOSED ACTIONS

Following the assessment of wildlife resource values and existing conditions, the likely impacts of development under each alternative are identified, and their relative significance found. Overlay maps were used to directly compare location, acerage and habitat quality values of the proposed alternatives. Spheres of influence or "ripple effects" were considered for the immediate development area, the general area of interest, and the county or state where appropriate. Environmental performance standards were related to constraints of actions necessary to maintain environmental quality. Additonal suggestions are given for habitat environment.

Impact Evaluation Definitions

Impacts are defined as any reaction, positive or negative, by an organism in response to a perceived change in its environment.

High Positive Impact A change of large magnitude benefiting 50% or more of the population; significantly greater than formerly; confirmed if the trend is subtantiated by three or more years of monitoring.

Moderate Positive Impact A change of moderate magnitude benefiting 25-

50% of the population; change is greater than formerly; confirmed if the trend is substantiated by three or more years of monitoring.

Low Positive Impact A probable change in value benefiting 10-25% of the population; change is more than formerly.

No Change A change in value of 10% or more or less than formerly in the population; or change is not confirmable.

Low Negative Impact A probable change in value involving 10-25% of the population; significantly less than formerly.

Moderate Negative Impact A change of moderate magnitude involving 25-50% of the population; noticeably less than formerly; confirmed if the trend is substantiated by three or more years of monitoring.

High Negative Impact A change of large magnitude involving 50% or more of the population; significantly less than formerly; confirmed if the trend is substantiated by three or more years of monitoring.

Assumptions The following assumptions were considered in evaluating the proposed actions and alternatives:

1 The public, USFS and Sherwin Ski Area are interested in maintaining or enhancing existing environmental components: air, soils, water, timber, wildlife and recreation.

2 The maintenance of general environmental quality will become more difficult in the future as demands on natural resources increase.

3 The current environmental regulations (local, state and federal) will continue or become more restrictive.

4 There will be an increasing demand for special uses on public lands.

5 The maintenance, perpetuation and wise use of the wildlife resource is in the interest of the public, the USFS, the California Department of Fish & Game and Sherwin Mountain Ski Area.

Resource Management Goals An integration of common public, USFS and DFG resource management goals were considered in the evaluations, such that the approved project would:

—Meet the concerns and desires of the national, state and local public.

—Be compatible with federal, state and local program objectives.

—Utilize actions which would favor wildlife resource management flexibility.

—Maximize the opportunities to enhance wildlife resource values

—Recognize wildlife resource quality as well as quantity values

—Provide maximum protection for nonconsumed wildlife resource values.

—Base resource allocation on land use suitability and capability.

Public Concerns A list of likely USFS, DFG and public concerns follows. These are addressed in evaluating the impacts of the alternatives. The No Action alternative does not warrant similar evaluation because there would be no impacts on the wildlife unless a change in the current environmental situation occured.

—Will there be an impact on the local deer herd?

—Will the proposed action affect deer summer and/or winter range?

—Will the proposed action affect historical, normal existing deer routes?

—Will the proposed action affect important wetlands used by various wildlife?

—Will the proposed action affect deer highway mortality rates?

—Will hunting pressure or the opportunity to hunt deer be affected by the proposed action?

—Will the proposed action affect annual wildlife mortality re: poaching, feral dogs, harassment, escape cover, etc.?

—What will be the impacts of increased human pressures on wildlife from the proposed action or the alternatives?

—Will wildlife habitats be affected by ski trail development?

—Will snowmaking activities affect wildlife use of traditional habitats?

—How will wildlife be affected by construction activities?

—How will wildlife be affected by ski area operations and maintenance activities?

—Can development disturbances to wildlife be minimized or mitigated?

—Will any sensitive or endangered wildlife species be affected?

—Will the proposed action limit public access to the National Forest for hunting or other recreational pursuits?

—Will the effects of construction or operational noise affect wildlife?

—How will the proposed action affect wildlife water resource quantity and quality?

—Will the proposed action create soil erosion hazards which would affect wildlife?

—Are there critical wildlife habitats? If so, how will these areas be protected?

—How will the public, USFS, DFG and the development proponent accomplish wildlife protection and mitigation?

Impact Evaluation Considerations

Wildlife Habitat Losses In nature, there are many compensatory and balancing situations. Thus, areas where vegetation is disturbed will ultimately develop a new form of

vegetation, which usually has a different group of wildlife species associated with it than the area had before disturbance. In many cases, the new vegetation, coupled with edge diversity following disturbance, is more useful to certain wildlife than before disturbance.

This oversimplification illustrates that the clearings and mountain trails of a ski area could provide future tradeoffs of vegetation types that could be expected to benefit a wider variety of wildlife than now use the area, due to the greater diversity of habitats available. Thus, the evaluation of each alternative is based on expected vegetation modification and its likely future value to wildlife.

Wildlife habitat includes vegetation (food and cover), soils and nutrients, water physiography, and other components. Of these, existing vegetation (character, composition, structure and diversity) is important as a determinant of utilization. Most of the alternatives are similar in existing vegetation likely to be disturbed, but differ in the extent, acreage, quantity of high value habitat involved, and revegetation required.

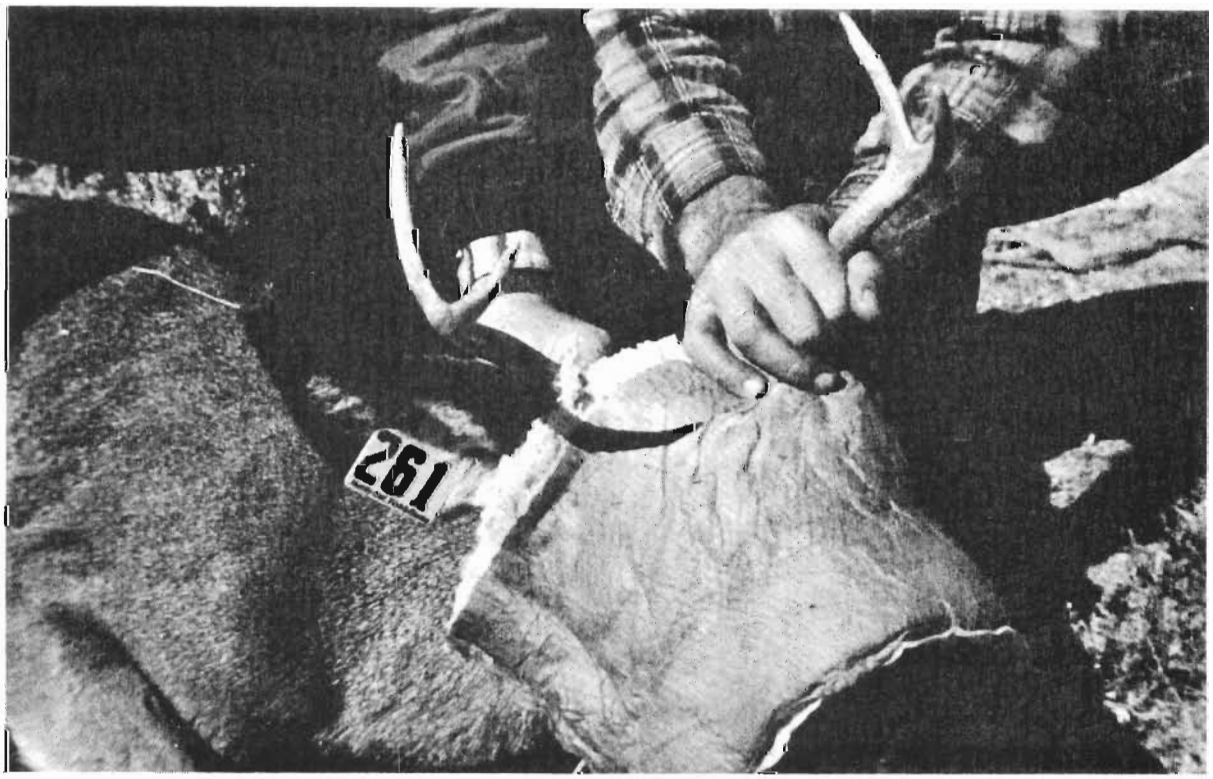
Deer Migration Routes In researching the relationship between the migration routes and the existing environment, two points became clear. The first is that the chaparral brush vegetation is of major importance, and dense riparian willow thickets are critically important, particularly near the proposed Canyon Lodge. The second is that the spring burnoff and wind scour pattern of the snow correlates closely with migration routes.

These are the areas where there might be conflict between the migrating deer and ski area operations. In normal precipitation years, the probability of a significant conflict is low, because the areas concerned would not offer quality skiing. If skiing quality were improved by snowmaking in the lower elevations, the deer impact might be increased. However, much of the conflict could be alleviated by monitoring deer movements in spring and fall, and coordinating ski operations with the migration.

Two proposed construction sites present concerns. The Motocross area is an important late spring staging site; Canyon Lodge is in the vicinity of a restricted portion of the migration route. In these areas, a minimum of 50% of the surface area should be left undisturbed as a migratory corridor for deer.

In this corridor, existing vegetation should be protected and maintained by whatever means necessary. If disturbance occurs, the affected area should be revegetated with cover similar to that which was there before. Some migrating deer can be directed away from areas of conflict by strategic placement of snow fencing. Livestock grazing should be deferred until after July 1 each year, or eliminated from the area entirely.

Snowcreek Village, a major residential and commerical complex, has been under development for the past ten years on private



property adjacent to the ski area. Tom Dempsey, one of the Sherwin proponents, is the project's developer.

About 250 units, accommodating 1,500 people, have been constructed on the northern section of the property. When completed, the project will accommodate an additional 7,500 people, about half of whom will be located in the southern portion of the site. The southern boundary of Snowcreek is adjacent to the northern Sherwin boundary, and located within 500' of the Mammoth Rock migration corridor.

The potential for adverse impacts on deer migration and general wildlife habitat in the areas near Snowcreek Village is apparant. This potential would continue to exist whether or not Sherwin is developed. However, the presence of a large population adjacent to the ski area also increases the potential for damage to critical ski area equipment and facilities. In addition, it raises the possiblity that someone may be injured on the site, increasing the ski area's liability.

It should therefore be in the best interests of both the wildlife and SSA for the general public to have limited access to the site during the off-season. Exceptions would include established hiking trails, which would remain open; and summer activities controlled by the ski area, such as summer lift rides to area facilities.

POTENTIAL MITIGATION

Potential adverse impacts associated with ski area development and operations could be reduced or mitigated—and in some cases, the habitat could be enhanced— through the use of the following measures:

1 Minimizing surface disturbance wherever possible by using swath-type cutting and leaving low brush and ground cover in place.

2 Revegetating, fertilizing and irrigating as quickly as possible during development to ensure prompt establishment and growth.

3 Increasing the quantity of wetlands and vegetative cover within the staging and migration areas by developing additional water resources, protecting existing resources wherever possible, and adding new vegetation consistent with existing patterns.

4 Reducing human presence in the ski area, except as required for migration monitoring and safety, during actual migration period. People should also be completely restricted from the staging area during the staging period.

5 Installation of drift fencing on Sherwin Creek Road to divert and direct deer away from dangerous road crossings. Signs, signals and radio warnings could be used to alert motorists to the hazards posed by migrating deer.

6 Fertilization of existing browse at strategic locations along the migration corridor to enhance the food supply for pregnant does.

7 Eliminating competition for critical browse by prohibiting the grazing of domestic stock within the staging area and the ski area's migration corridors during strategic times.

8 Closing the Motocross and Sherwin Creek Campground until after spring migration is completed.

9 Camouflaging all ski area structures and equipment with natural materials, and siting these objects in a manner designed to reduce potential stress on migrating animals.

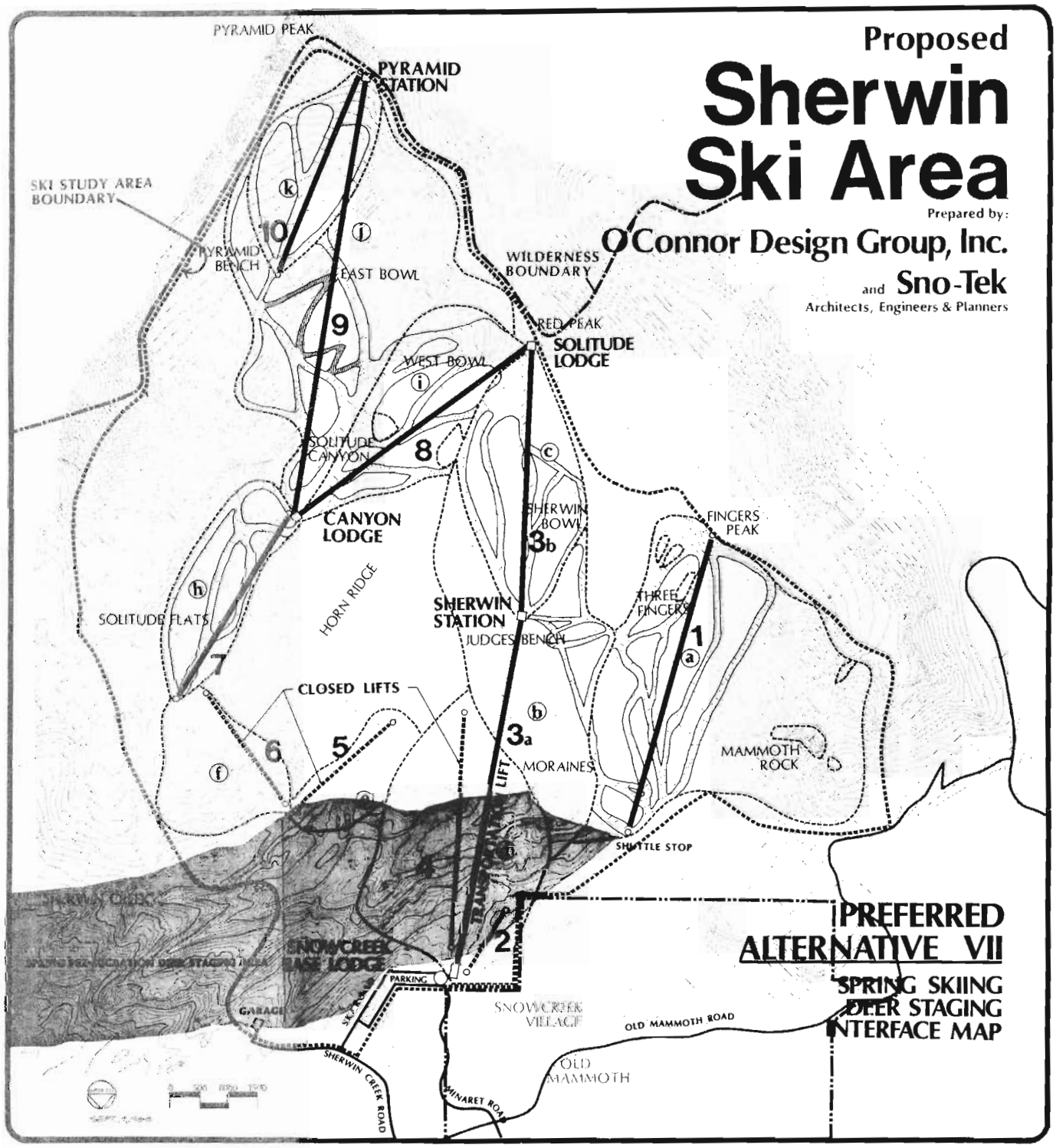
10 Establishing an ordinance prohibiting all dogs within the ski and staging areas, and giving Sherwin Ski Area, the USFS, the Town of Mammoth Lakes, or another agency the legal ability to enforce it.

A site-specific staging and migration plan should be completed and approved during the Environmental Analysis and design development phase of the ski area project.

Alternative VII, the proponent's preferred alternative, is used to describe a possible spring skiing scenario incorporating some of the mitigations discussed above. As shown on the accompanying map, the staging area used by the deer for six weeks prior to migration through the study area would be affected by the operation of lifts 4, 5 and 6. Consequently, these three lifts would be immediately shut down at the first sign of deer movement in the staging area, and skier out-of-bounds fencing would be erected. The Motocross entrance would also be closed to ensure the lowest possible level of human presence within the staging area.

During staging, the herd would be monitored by an observer reporting to the USFS, the DFG, and Sherwin Ski Area. At the first deer movement along the Solitude Canyon or Mammoth Rock migration corridors, the entire ski area operation would immediately be closed, and only service and security personnel would remain in the area until migration was completed.

The fall migration would be similarly monitored, so that maintenance and construction work would cease and all ski area personnel would be removed from the site between the appearance of the first returning deer and the end of the migration period.


Proposed
Sherwin
Ski Area
Prepared by:
O'Connor Design Group, Inc.
and Sno-Tek
Architects, Engineers & Planners
PYRAMID PEAK
PYRAMID STATION
SKI STUDY AREA BOUNDARY
PYRAMID BENCH
EAST BOWL
WILDERNESS BOUNDARY
RED PEAK
SOLITUDE LODGE
WEST BOWL
SOLITUDE CANYON
CANYON LODGE
SHERWIN BOWL
FINGERS PEAK
HORN RIDGE
SOLITUDE FLATS
SHERWIN STATION
JUDGES BENCH
THREE FINGERS
CLOSED LIFTS
MORAINES
MAMMOTH ROCK
SHUTTLE STOP
SHERWIN CREEK
SNOWCREEK BASE LODGE
PARKING
GARAGE
SNOWCREEK VILLAGE
OLD MAMMOTH ROAD
OLD MAMMOTH
MINARET ROAD
SHERWIN CREEK ROAD
PREFERRED ALTERNATIVE VII
SPRING SKIING
DEER STAGING
INTERFACE MAP

3 UTILITIES

SOLID WASTE

Solid waste disposal in Mammoth Lakes is handled on a contractual basis by Mammoth Disposal, Inc. Collection is mandatory for all town areas, including the ski area.

Waste is transported to the Benton Crossing Landfill, one of three landfills operated by Mono County. At the town's current growth rate, this facility is expected to operate for another 15 to 20 years. An 80-acre site in Chalfant Valley is being studied as a possible site to be used following the closure of the Benton landfill. The rising cost of operating the landfill may force the county to impose a "tippage fee," which could mean increased costs to commercial customers.

Mammoth Mountain Ski Area produced about 15,100 cubic yards of uncompacted solid waste in 1984/85. Based on similar design parameters, Sherwin Ski Area would produce the amounts of solid waste shown in the accompanying table.

The current volume of compacted waste generated annually by the town is about 109,500 cubic yards, or 300 yards per day. The proponents' preferred alternative would increase this amount by 2.5%, a minor impact according to waste disposal operators.

Recent studies examined the landfill's potential for energy generation and recycling projects. Recycling was determined to be not feasible due to the low volume of waste generation and the distance to recycling markets. One study indicated that a county-run pyrolisis (burned waste energy) project may be feasible in the near future.

A state-approved, environmentally sound waste incineration unit is now operating at the Mid-Terminal at MMSA. It is proposed that similar approved incinerators be installed at Sherwin lodges that are not accessible to disposal trucks in winter. This could reduce the totals in the table below by at least 40%. Ashes from the incineratorswould be accumulated at the site and removed from each lodge by truck during summer maintenance.

ELECTRICAL

Demand Three types of electrical use will occur at Sherwin Ski Area: lift operations, lodge facilities, and snowmaking. Projected demands for each use are presented in the table below.

Under normal conditions, the daily demand will remain fairly constant, with occasional peaks on holidays. If snowmaking is developed, hours of operation should be limited to late afternoon and early evening to reduce peak loads. The electrical demand for space heating can be reduced by using cogeneration and waste heat from snowmaking compressors to partially heat base facilities.

Projected electrical demand for the seven alternatives ranges from .8 to 4.25 megawatts per year.

Supply Supply is a complex question that involves everything from the possible need for new generating plants to agreements to purchase power from third-party suppliers. In the absence of any well-defined regional energy shortage, it is assumed that adequate supplies exist to meet the increased demand generated by the ski area.

TOTAL ANNUAL SOLID WASTE GENERATION
(in cubic yards per year)

Alternative	1987/88	1988/89	1989/90	1990/91	1991/92
I	4,810	6,500	4,400	4,400	4,400
II	4,091	6,758	10,900	8,800	8,800
III	4,226	7,876	11,9780	15,300	13,200
IV	4,290	6,500	4,400	4,400	4,400
V	3,706	8,400	10,900	8,800	8,800
VI	3,548	8,546	11,074	15,300	13,200
VII	4,636	8,044	10,900	8,800	8,800

The region in which the Sherwin site is located presently receives its electricity from Southern California Edison Co. In 1986, the electrical substations serving the immediate area have a combined design capacity of about 66 megawatts. Increased conductivity due to lower temperatures raises the winter service capacity to approximately 71.4 megawatts, enough to supply a growing Mammoth Lakes, including an 8,000-SAOT Sherwin Ski Area, for the next 15 years. The three transmission lines currently serving the city are also sufficient for 15 years.

New line extentions to the proposed ski area will be installed underground according to PUC and Town of Mammoth Lakes ordinances. Installation costs will be borne by the ski area developers and SCE, and will have a negligible effect on other SCE customers.

Solar Energy Potential Two of the potential lodge sites examined—Snowcreek Base (Alternative VII) and Solitude Lodge—provide excellent potential for the use of solar energy equipment.

The Snowcreek Base (Alternatives I, II, and III) and Canyon Lodge sites are located in shadow a portion of each day. However, the reflected radiation (albedo) from the surrounding snow fields and bowls at these sites could increase the solar gain to an acceptable level.

Conclusions Additional electrical demand attributable to Sherwin Ski Area would be a maximum of 4.25 megawatts per year (Alternative III), representing an 8% increase over current area demand. Existing transmission lines and substations are adequate to meet projected town and ski area demands. Final design and installation of the ski area's lifts and structures should incorporate the most energy-efficient technology available.

COMMUNICATIONS

Service Continental Telephone Manager Dennis Jones has verified that in the immediate area of the proposed ski area, CONTEL has facilities available for an additional 300 lines, an amount more than adequate for both ski area and community growth.

Inter-Area On-mountain communication between facilities will be through a system operated by the ski area. Communication between ski patrol members, lift operators and other key personnel will be by radio.

SHERWIN SKI AREA ELECTRICAL DEMAND

DEMAND SOURCE	Alternative I	II	III	IV	V	VI	V
Ski Lifts							
Horsepower*	1107	3360	4721	1155	2904	4167	3670
Megawatts/year**	.733	2.534	4.034	1.010	2.590	3.627	3.080
Design Totals	.807	2.690	4.250	1.084	2.746	3.848	3.227
Snowmaking (Megawatts/Year****)	.049	.053	.086	.012	.035	.063	.053

* VTF/8 X 1.2 = horsepower

** $\frac{\text{Hours/Day (7.5) X lift days X .763}}{1000}$ = megawatts/year

*** Day Use = 4w/SF X 8 hours = 32 watts
Night Use = 2.6w/SF X 16 hours = 41.6 watts
Average winter day use = 73.6 watts/SF
Average summer day use (25%) = 18.4 watts/SF
Total winter days = 175 X 73.6 = 12,880 w/SF
Total summer days = 190 X 18.4 = 3,496 w/SF
16,376 w/SF

$\frac{\text{16,376w X square feet}}{1000}$ = megawatts/year

**** $\frac{\text{6.56 kw X snowmaking acres}}{1000}$ = megawatts/year

This is based upon three weeks of producing 30 inches of snow

3 VISUAL ANALYSIS

The visual resource study was completed by USFS landscape architect Jeff White, using the Forest Service Visual Management System to project the likely visual effects of a ski area development at Sherwin. The quality of the visual resource in Mammoth Lakes is a major public concern, since the large number of visitors who form the basis of the area's recreation industry are in large measure attracted by the region's unique natural scenery.

The Sherwin landscape is characterized by 4,000' escarpments, deep canyons, rocky outcroppings, talus and and avalanche chutes and a variety of vegetation. Much of the site is highly visible, due to the steepness of the terrain and the unobstructed views from below.

POSSIBLE EFFECTS

A ski area at Sherwin may affect the visual quality of the site in three ways:

Vegetation Modification Construction of lifts, roads, runs and base facilities could cause vegetation to be removed, added, or changed, causing visible modification. Mitigation measures include limiting the initial clearings for roads, lifts and runs to the lowest degree possible, thus minimizing the need for later replanting; carefully blending and feathering the tree edge to resemble natural rock and avalanche chutes; and placing chair lifts within ski runs or natural canopy openings wherever possible to avoid creating additional openings that would appear as narrow lines.

Soils Manipulation Ski area construction usually results in soil disturbance of some magnitude. Depending on the coloration of the subsoils, the contrast between disturbed and undisturbed areas can cause major visual impacts. All soil movements should be undertaken with attention to erosion control, careful blending with the topography, and revegetation where appropriate. Felled trees may be left on the slopes for erosion control. Brush and stumps can be left in place. Shallow ditches would carry spring runoff into the site's natural drainages. Road building should be kept to a minimum, and avoided entirely on steep lower slopes. Cuts and fills, which create a high degree of visual disturbance, should also be limited to the greatest extent possible. The use of helicopters during construction is encouraged.

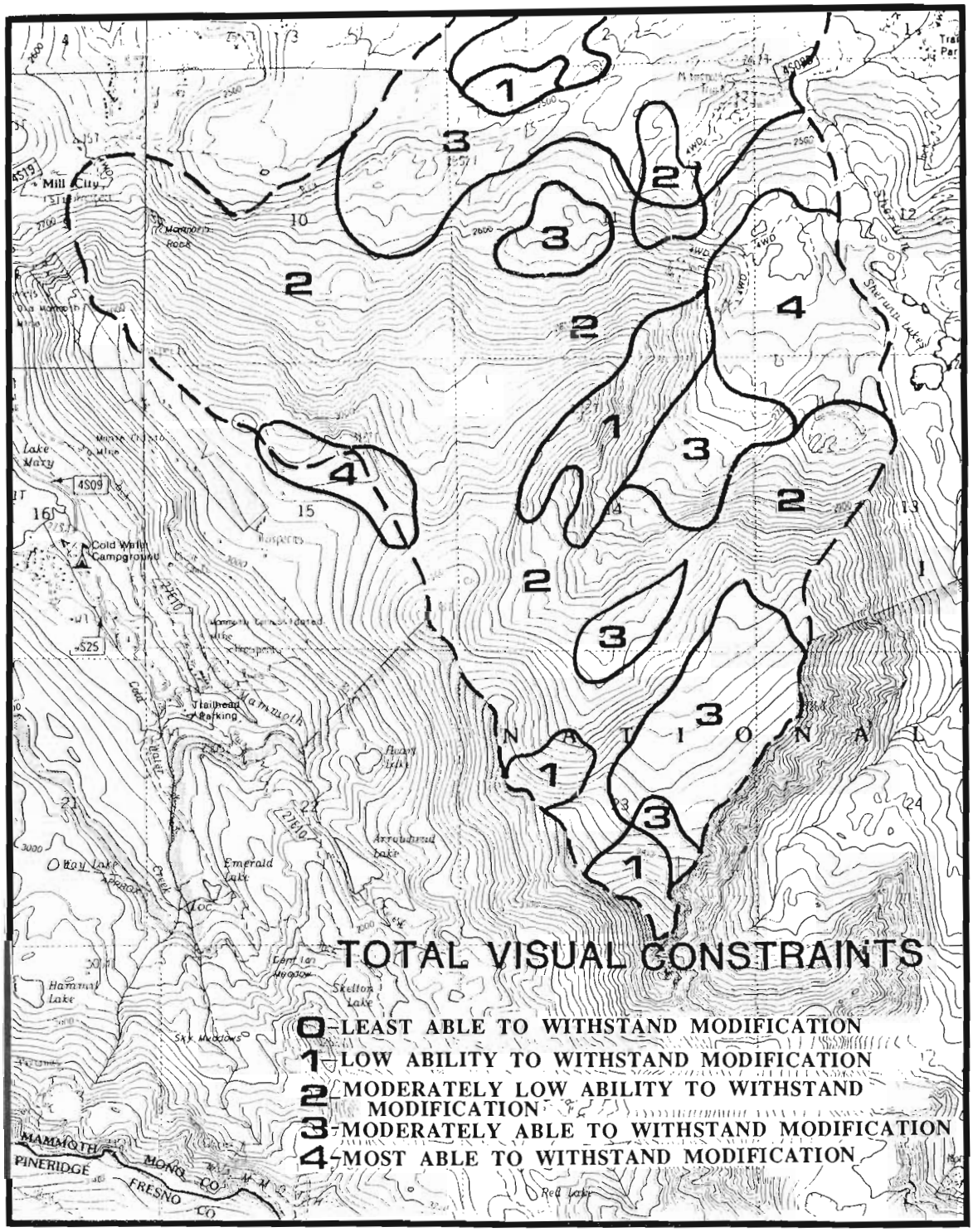
Structures Ski area buildings can range from small lift control and storage sheds to large base lodge complexes. The size, scale, and location of these structures are potential sources of visual impact. Care in siting and location and the use of style, materials, color and shape to create harmony with the natural landscape can dramatically reduce these impacts. Buildings should be surfaced with natural materials and designed around a controlled architectural theme, with strong color used only as an accent. Reflective surfaces should be avoided.

METHODS

The visual qualities of the Sherwin site have been subjected to a variety of analyses and inventories.

Variety Class expresses the quality of the scenic resource. Three broad categories are used to characterize the amount of variety found in the area: distinctive, common, and minimal variety. Generally, common landscape can sustain development with the least visual impact. The Sherwin site is classified as an area of distinctive variety because of the sharp peaks, steepness, avalanche and talus slopes, rock outcroppings, and meadow and riparian vegetation found there. This classification means that the site is a focal point that most people notice when they look at the scenery around them. Since the variety and quality of the Mammoth Lakes landscape attracts millions of viewers, they would be quick to notice any deviation unless the deviation was given natural characteristics.

Sensitivity Level was also assessed. This includes a measure of public concern for the scenic quality when the site is viewed from given observation points. Sensitivity depends on the amount and type of use around the site, and its degree of visability The Mammoth Lakes area is used year-round by large numbers of recreationists, most of whom consider the area's scenic quality a high priority. The Sherwin site plays a major role as a very scenic backdrop for their many activities. It can be seen from many highly


TOTAL VISUAL CONSTRAINTS
0-LEAST ABLE TO WITHSTAND MODIFICATION
1-LOW ABILITY TO WITHSTAND MODIFICATION
2-MODERATELY LOW ABILITY TO WITHSTAND MODIFICATION
3-MODERATELY ABLE TO WITHSTAND MODIFICATION
4-MOST ABLE TO WITHSTAND MODIFICATION
Mill City
Lake Mary
Cold Water Campground
Mammoth
Emerald Lake
Arrowhead Lake
Skelton Lake
Red Lake
Sherwin Lakes
MAMMOTH
PINERIDGE
MONO CO
FRESNO CO

sensitive viewpoints, including US 395, State Route 203, Sherwin Creek Road, Lake Mary Road, the Scenic Loop, the Town of Mammoth, and Shady Rest and Sherwin Creek campgrounds.

The distance between the viewpoint and the site is an important factor in determining sensitivity. When viewed at close range, modifications are more apparent and the site is more sensitive. Sherwin is generally viewed as middleground, somewhere between .5 and 5 miles from the viewer. Though a few small parts of the site are not visible from any identified key viewpoint, most of project area is highly visible from many major viewpoints, making ski development on the site a challenge.

Visual Absorption Capability (VAC) measures the site's capacity to absorb impacts. Elements that contribute to this absorption include broken topography and screening vegetation; elements that limit it include steep slopes and low vegetation. Since ski area development often involves removal of large amounts of screening vegetation on steep slopes, this inventory may not accurately indicate a site's ability to absorb runs and lifts, though it can be reliable where structures are concerned. About 20% of the Sherwin area was found to have a high ability to absorb change, 70% fell in the intermediate range, and the remaining 10% comprised scattered parcels that have a low ability to absorb change.

Existing Visual Condition (EVC) serves as a baseline against which the impact of future development can be measured, and as a design guideline for maintaining acceptable disturbance levels. Much of the Sherwin site was found be untouched, due to its ruggedness and lack of water (an important precondition for recreational use). The current condition class will change in areas where downhill ski facilities are developed.

Variety Class and Sensitivity Level information were combined to determine **Visual Quality Objective** (VQO) classes, which determine how much disturbance can be permitted in a specific area to maintain a minimum acceptable level of visual quality. The Forest Land and Resource Management Plan will state the desired objectives for the area. All ski area development will be required to meet or exceed the VQO of Partial Retention, which means that modifications must be visually subordinate to the landscape's natural character. Such a modification would not catch a viewer's eye, become a focal point, or contrast with the natural features around it.

CONCLUSIONS

The visual resource data were applied to the sixteen identified regions of the Sherwin site.

Fingers Peak This prominent peak is highly visible from Old Mammoth Road and Lake Mary Road, at a distance of about 2 miles. Its south slope, dropping into Sherwin Bowl, is visible from US 395, about 5 miles away. Its VAC rating is moderate due to the distance from which it is viewed. Lifts on the peak and the slopes below it could be hidden among the many natural chutes and talus slopes. Runs would be more difficult, since rock might need to be smoothed out. Towers should not be placed on the ridge, where they would interfere with the skyline.

Three Fingers This steep bowl is visible from the same points as Fingers Peak. The most critical view is from Old Mammoth Road, which looks directly into it. Lifts and runs could be successfully developed among the many vertical chutes.

North Face Highly visible from Old Mammoth Road and Lake Mary Road, and to a lesser degree from State Route 203, from an average distance of 1.5 miles. The face's numerous avalanche chutes make lift and run development possible, though the continuously steep slopes may make it difficult. Base facilities at the foot of the North Face would likely be highly visible, since they would be located at the far end of the meadow.

Mammoth Rock is an important landmark throughout the Mammoth Lakes area, and a popular destination for hikers and other summer users. Structures and lifts near the rock would be difficult to screen, since the rock itself attracts attention. The moderate VAC rating is misleading, since the rock is located at the head of a meadow, where it serves as a focal point. Any development here would be visually difficult.

Sherwin Bowl is most visible from Lake Mary Road, which offers a high-elevation viewpoint at a distance of 2.5 miles. The bowl's tree cover could make it difficult to develop runs, especially on the northwest slope, if care is not taken. Development would not be noted from most other viewpoints, since the bowl is high above the viewer and hidden by the Judge's Bench.

Judge's Bench is not directly seen from most viewpoints, because of its high elevation. However, the steep tree-covered slopes just below the bench are highly visible from most observation points. Development of lifts and runs may be difficult without creating definite patterns on the slopes, though recent avalanches in the area have cleared several new vertical paths.

Moraines The glacial moraines in the lower part of the site can be seen from Old Mammoth Road, Sherwin Creek Road and Lake Mary Road, at distance between one and two miles. The area's undulating terrain, tree

cover and low profile give it a high ability to absorb development. The leading edges of the moraines on the meadow and the ridges will be most sensitive, since they are highly visible from Old Mammoth Road. Soil disturbance in this area would contrast greatly with the dense vegetation.

Red Peak is most visible from State Route 203 and US 395, at a distance of 5 to 8 miles. This distance means that lift and run development will have minimal impact, though care should be taken to avoid interference with the skyline.

Horn Ridge is the most prominent ridge in the Sherwin area, and is seen clearly from all viewpoints. The combination of densely forested lower slopes and extremely steep inclines all over the ridge make any kind of development very difficult. Because of the ridge's prominence, lifts over the top (as shown in Alternatives II and III) would be skylined, making them visible from distant viewpoints. Mitigation measures would be difficult on the ridge, and have little effect.

Solitude Canyon is not visible from viewpoints to the north and west. However, it is a focal point when seen from the east on State Route 203 and US 395. It is considered a major element of the site, and attracts viewer attention. The canyon's distance from major viewpoints and great variety of vegetative patterns give it a high capacity to absorb modification.

Portions of the slopes rising from the canyon may be easily seen from Sherwin Lakes Trail and the Lakes area in general. These viewpoints have a level one sensitivity and are near the canyon, so sites visible from them may be difficult to develop.

Solitude West Bowl is seen from the same locations as Solitude Canyon. Development should not be visually difficult, because of the great distances from which it is seen and the small amount of vegetation modification required. Skylining of lift towers should be avoided.

Solitude East Bowl is not generally visible from major viewpoints.

Pyramid Peak is the highest point in the study area. It is also the most distant, and therefore not an important visual element. Care should be taken not to locate towers along the skyline, or where they can be seen from the wilderness area on the southern side of the peak.

Pyramid Bench is largely invisible from major viewpoints, though towers may be seen if they are placed on the extreme southeast edge of the bench.

Solitude Flats are not visible from key viewpoints, and have a high VAC.

Motocross is only visible from within the site and from Sherwin Lakes Trail. A small to medium-sized development could be completely screened, though the trail would have full view of the area.

RECOMMENDATION

It is recommended that a site-specific visual analysis be completed at the design development and environmental analysis phases of the project, and that the findings of that analysis be used in the design process.

3 AIR QUALITY

The potential air quality impacts of the various alternatives were analyzed by air quality engineer Hans Giroux. The study was based on design data for the seven alternatives, as well as the findings of the transportation report.

Within the study area, the predominant winter airflow drainage conditions maintain generally better air quality than in other areas of Mammoth Lakes. The principle sources of pollution in and around Sherwin would be construction-related dust, which is temporary and generated in summer only; and particulates from incinerators and fireplaces operated by the ski area. No alternative has more than two incinerators and three fireplaces, and each would be fitted with EPA-approved emissions control devices. It is anticipated that the ski area will have no direct impact on local air quality levels.

More significant are the indirect effects that additional winter visitors—at Sherwin or any other local recreation facility—will have on air quality in the community. Though Mammoth Lakes enjoys excellent air quality during the summer, the intense thermal inversions that occur during the winter inhibit the vertical dilution of air pollutants. High winter particulate levels, from wood fires and possibly auto emissions, degrade visibility and violate clean air standards. The Great Basin AQCD issues permits to indirect pollution sources in order to control emissions resulting from their presence. In the case of Sherwin, these emissions would include CO from increased traffic; and TSP and PM-10 from traffic, construction, winter cinder use, etc.

Carbon monoxide, the primary auto exhaust pollutant, rarely exceeds allowable levels, and there is some margin remaining before regional CO standards are routinely threatened. Regional emissions on peak days are high because many out-of-area cars are not tuned for high-altitude operation. Further, the brevity of the average in-town trip means that many cars never warm up thoroughly, impairing combustion. These conditions are already noted in the Mammoth Lakes General Plan, which anticipates 5,100 new housing units in the community, and provides for development of an efficient citywide transit system to mitigate adverse air quality impacts. The first phase of this system began operation in November 1985.

No new pollution "hot spots"—highly localized areas of clean air standards violations

REGIONAL AIR POLLUTION EMISSIONS ATTRIBUTABLE TO SHERWIN
(in pounds per maximum use day)

Pollutant	Alternative						
Species	I	II	III	IV	V	VI	VII
1987							
Reactive Organic Gases	59.8	127.0	161.5	69.1	96.2	154.8	103.9
Carbon Monoxide	749.3	1,589.6	2,020.5	865.5	1,203.4	1,576.0	1,299.9
Nitrogen Oxides	20.1	42.7	54.3	23.2	32.3	45.3	34.9
Sulfer Dioxide	1.0	2.0	2.6	1.1	1.6	2.1	1.7
Suspended Particulates	1.5	3.0	3.9	1.7	2.3	3.2	2.5
1990							
Reactive Organic Gases	55.9	118.9	151.1	64.8	90.0	126.2	97.2
Carbon Monoxide	675.4	1,435.0	1,824.1	781.3	1,086.4	1,522.2	1,173.5
Nitrogen Oxides	15.8	33.5	42.6	18.3	25.4	35.6	27.4
Sulfer Dioxide	1.0	2.0	2.6	1.1	1.6	2.1	1.7
Suspended Particulates	1.6	3.0	3.9	1.7	2.3	3.2	2.5

Traffic data based on Sherwin Transportation Study 1/86
Air Quality Emissions Data based on EMFAC6D computer program:
Temperature <35 degrees F
Altitude >3,500'
Mode Mix: 80% colds start, 10% hot start, 10% hot stabilized
Traffic Mix: Standard California Arterial Traffic Mixes

within a larger domain of healthful air quality—will be created by the proposed ski area, though incremental amounts of traffic may be added to four of the six CO "hot spots" that already exist in Mammoth Lakes. These"hot spots" are located at the major intersections of Mammoth Lakes' four major arterial roads: Main Street/State Route 203, Old Mammoth Road, Minaret Road, and Meridian Blvd. When expanded, the bus transit system should effectively improve air quality at these pollution nodes by reducing the number of short, highly polluting auto trips. Under Alternative VII, impact would be further reduced, since 25% of Sherwin skiers would be able to walk to the slopes from their accommodations.

The accompanying table shows the estimated emissions that would be attributable to development at Sherwin.

3 TRANSPORTATION

A comprehensive transportation study was conducted in 1985/86 by Kaku Associates to assess the current transportation and traffic conditions in Mammoth Lakes, and project the likely impact of a new ski area at Sherwin. The study evaluated various transportation and parking options for the ski area.

CURRENT CONDITIONS

Mammoth Lakes Traffic volumes in Mammoth Lakes are now heaviest along Main Street between Old Mammoth Road and Minaret Road; on Minaret Road just north of Main Street; and on Old Mammoth Road south of Main Street—the town's main commercial areas. Other arterial roads include Meridian Road and Old Mammoth Road south of Meridian. These are less traveled because they are located in residential or undeveloped areas.

Peak traffic loads in Mammoth occur late on Saturday afternoons during the winter. During this period, overloaded (level F) road conditions exist on Minaret Road north of Main, and on State Route 203 east of town. Poor (level D or E) road conditions exist along portions of Main Street, Old Mammoth Road, and Lake Mary Road west of Minaret. In general, two lane roads operate at lower levels of service (LOS) than four lane roads.

Caltrans is currently planning to widen State Route 203 between Main Street and US 395. In addition, the town has plans to extend Meridian Blvd. westward to Lake Mary Road; extend Minaret Road south to Old Mammoth Road; and connect Laurel Pines Road between Meridian and Old Mammoth Road. These improvements are planned independently of the Sherwin project, and are scheduled to take place over the next two years.

The town is also planning a transit hub near the intersection of Meridian and Minaret. This facility would include park-and-ride and a regional bus terminal in addition to serving as the base for a local bus transit system.

Mammoth Mountain Ski Area and Lift Engineering Co. have proposed construction of a 4,000 passenger-per-hour aerial transit system for the community, with phase I to be built during the summer of 1986. Phase I would put a transit line in the center median of Meridian Blvd., connecting a point 600' east of Old Mammoth Road with a point 100' west of Majestic Pines Blvd. near MMSA's Base 7. The line would run a total of 1.8 miles, accomodate walk-in passengers at 6 stations along the route, and operate during both summer and winter. The system would significantly reduce vehicular traffic and reduce the number transit buses needed by the community.

US 395 Traffic on US 395 between Mammoth Lakes and southern California is also likely to increase, in amounts proportional to the capacity of the accepted alternative. CalTrans studies have indicated that US 395 and State Route 14 should be entirely widened to four lanes between Los Angeles and Tioga

Pass. 47% of this road is currently four-lane. Another 30 miles scheduled to be widened within the next five years (subject to the availability of highway funds), bringing the total amount of four-lane highway to 60%.

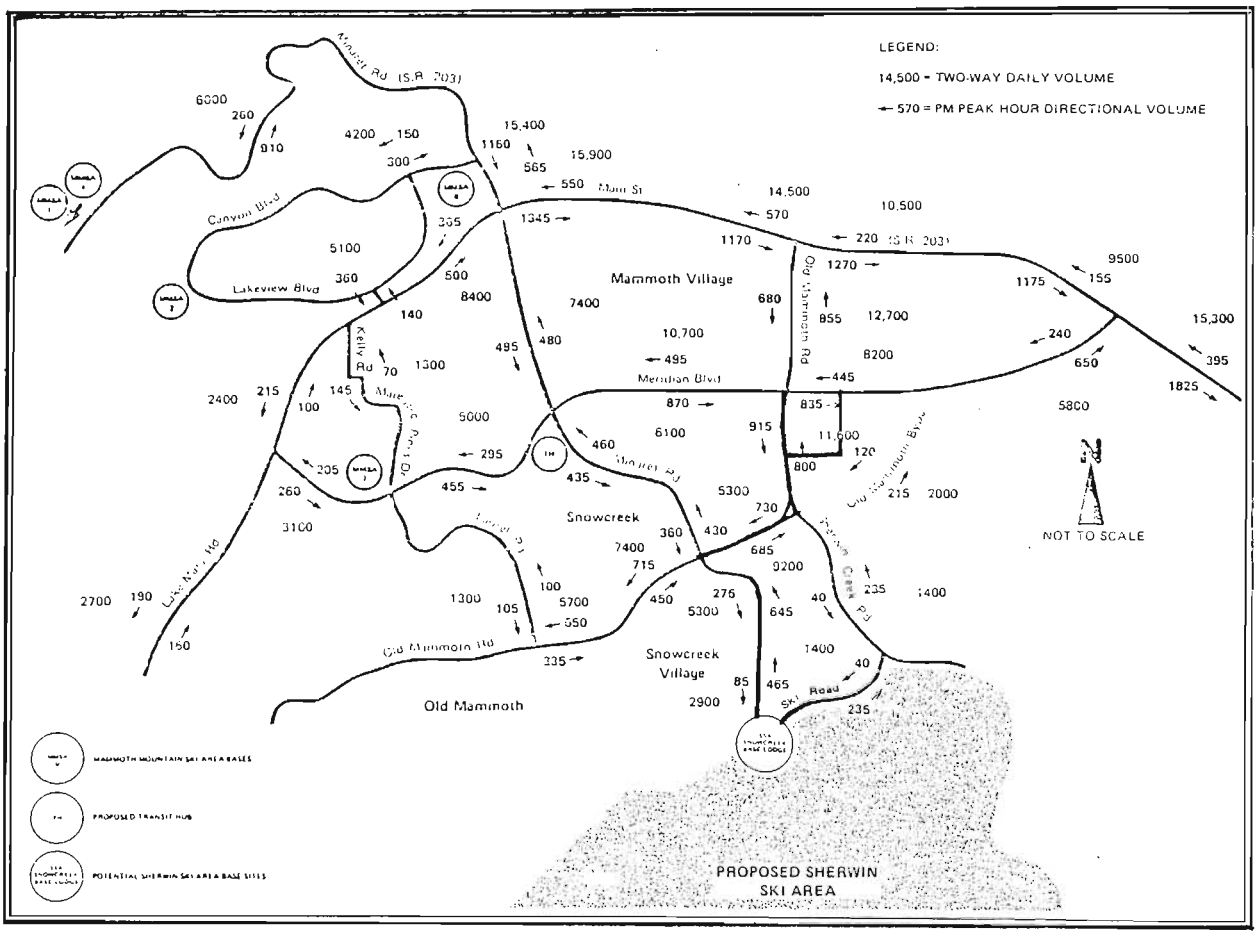
Congestion along this route may also be relieved by increased use of tour buses, and by improved air service following the completion of planned improvements at the Mammoth Lakes airport.

Greyhound Bus Lines currently provides two northbound and one southbound bus daily between Mammoth and southern California. The scheduling of these buses is generally not convenient for skiers, so only a small fraction of visitors use them. Between two and five non-scheduled tour buses arrive in Mammoth each weekday, with an average of 65 to 75 buses arriving for weekends and holidays. Peaks of 100 to 125 buses have been noted. Since a full tour bus replaces 12 to 13 autos on US 395, greater use of these buses should be actively promoted. Improvements in Mammoth Lakes' local transit systems will further encourage bus riders to leave their cars at home.

Two airlines now provide three flights daily between Mammoth/June Lakes Airport and southern California, with a fourth flight offered on Fridays and Sundays. It is estimated that these airlines provide a total of 50 passenger seats each way on a peak day. The Town of Mammoth Lakes is currently attempting to increase the level of air service by improving airport facilities and attracting carriers serving Los Angeles, San Diego and the San Francisco Bay area.

SKI AREA IMPACTS

In order to accurately assess future traffic flows in Mammoth Lakes, it was necessary to project how much traffic would be generated by planned projects other than Sherwin, including the Mammoth Mountain expansion and several residential and lodging developments. The number of vehicle trips generated under Sherwin's seven alternatives was then estimated, presuming heavy dependence on private autos and limited transit service. These preliminary, unmitigated forecasts were compared to identify alternatives which should be considered further.



PEAK SATURDAY TRAFFIC VOLUMES - ALTERNATIVE VII WITH OLD MAMMOTH BYPASS

Under Alternatives I, II, III and VII (all of which use Snowcreek Base), primary vehicle access to the base would be via an extension of the planned Minaret Road southward from the Snowcreek Village area. Secondary access would be available from Sherwin Creek via the proposed Ski Road. During summer months, the Minaret Road connection may be closed where it crosses Snowcreek Golf Course, and Ski Road would become the primary access. Access to Moraine Base Station (under Alternative III) would be from Sherwin Creek Road. Fingers Station (Alternatives I, II and III) would be served by a shuttle bus system from Snowcreek Base.

Under Alternatives IV, V and VI, access to Motocross Base would be via a reconstructed Sherwin Creek Road. Access to Moraine Station (Alternative VI) would be provided from Sherwin Creek Road. Fingers Station (Alternatives V and VI) would be served by the proposed Ski Road, which connects to Sherwin Creek Road.

Trip generation figures for each alternative are shown in the accompanying table.

MITIGATION OPTIONS

Operating conditions on portions of Old Mammoth Road, Meridian Blvd. east of Old Mammoth Road, and at all of the town's major intersections would be affected by the new ski area. Possible mitigations include:

Chateau Bypass For alternatives of 8,000 and 12,000 SAOT, Kaku Associates recommends a new 1/4-mile bypass road beginning on Meridian Blvd. just east of the Old Mammoth Road intersection. From there, it would continue south to connect with Chateau Road. This bypass would divert incoming and outbound Sherwin skiers around the stretch of Old Mammoth Road south of the Meridian intersection, thus reducing the typical Friday and Sunday night congestion at this intersection. Not including right-of-way purchases, construction costs for the new road are estimated at $130,000.

Overhead Lift The possibility of running an overhead transit gondola between the Minaret/Meridian transit hub and Sherwin Ski Area was also explored. This would improve traffic conditions along Old Mammoth Road, but have little impact elsewhere in town.

Under Alternative I, II and III, the lift would run 3,500' into Snowcreek Village, then another 2,600' to the base lodge. Such a lift would cost an estimated $4.75 million, and require a capacity of 1,500 passengers per hour to create any significant improvement in local traffic. For Alternative VII, the lift would run 5,000' directly to Snowcreek Base, cost $3.4 million, and require 1,000 riders per hour

PROJECTED TRIP GENERATION RESULTING FROM SHERWIN SKI AREA

Alternative		SAOT	PAOT	Two-Way Daily Trips	PM Peak Hour Trips: In	Out	Total
I	Snowcreek	3,000	4,280	2,210	45	390	435
	Fingers	1,000	0	0	0	0	0
		4,000	4,280	2,210	45	390	435
II	Snowcreek	5,500	8,560	4,710	90	840	930
	Fingers	2,500	0	0	0	0	0
		8,000	8,560	4,710	90	840	930
III	Snowcreek	5,500	11,240	6,070	110	1,080	1,190
	Fingers	5,000	0	0	0	0	0
	Moraine	1,500	1,610	1,120	20	220	240
		12,000	12,850	7,190	130	1,300	1,430
IV	Motocross	4,000	4,280	2,510	45	450	495
V	Motocross	6,000	6,420	3,490	70	630	700
	Fingers	2,500	2,680	1,900	30	360	390
		8,000	8,560	4,990	90	910	1,000
VI	Motocross	8,500	9,100	4,890	90	860	950
	Fingers	2,500	2,680	1,900	30	360	390
	Moraine	1,000	1,070	740	10	140	150
		12,000	12,850	7,530	130	1,360	1,490
VII	Snowcreek	8,000	8,560	3,770	90	650	740

to be effective. It would not be feasible to construct a lift to the Motocross site. Because any lift would pass through an environmentally sensitive meadow area, and because similar traffic reductions could be achieved more efficiently and at lower cost with an effective bus system connecting the transit hub with Sherwin, the traffic consultants recommended that this idea be dropped from further consideration.

Transit Buses Eight 40-passenger buses connecting Sherwin to the community would enable 1,500 skiers to reach the slopes without using their cars. For an 8,000-SAOT alternative, this would reduce the amount of ski area parking needed and reduce community noise and air pollution levels, though the impact on traffic conditions would be minimal. Further increasing the number of buses would improve town traffic conditions, but would

result in bus bunching and congestion at bus stops. The researchers felt that overall traffic levels would not improve unless street system improvements were implemented in addition to the bus system. (See "Recommendations" below.)

It is important to note that improvements in the Mammoth Lakes transportation system will be necessary whether or not the Sherwin Ski Area is developed, and that such improvements are currently being planned and executed by the Town independently of the proposed project.

RECOMMENDATIONS

A review of the projected town traffic volumes and operation conditions indicates that, on the whole, Snowcreek-based alternatives have a lower impact on Mammoth Lakes streets and highways than equivalent Motocross-based alternatives, and are consequently easier and less costly to mitigate.

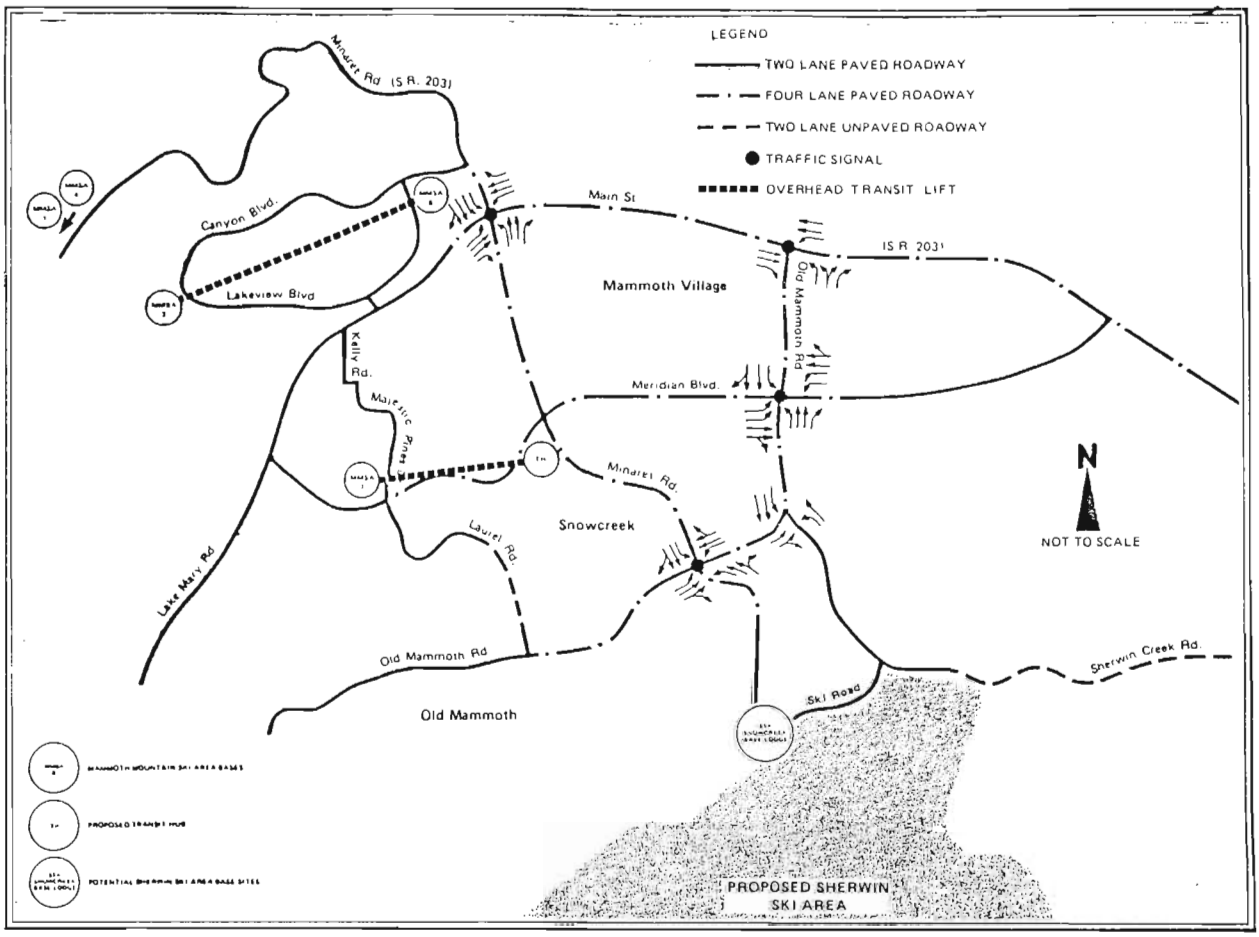
At the 4,000 and 8,000 SAOT levels, the estimated capital cost of roads, parking lots and shuttle buses at Snowcreek is lower than for similar Motocross alternatives. Maintenance and snow removal costs are also lower. The number of skiers who can walk to the slopes increases, reducing the demand for shuttle buses and parking.

Alternative VII was identified as the best alternative from both an operational and cost standpoint. It offers a lower traffic impact than the other two 8,000 alternatives, requires the fewest miles of new access roads, does not require a shuttle bus system for mountain access, and has the lowest estimated capital cost of any alternative. The recommended transportation plan under Alternative VII consists of the following elements:

Access Requirements

—A Minaret Road extension extending about 3,200' from Old Mammoth Road to the southern boundary of Snowcreek Village, if not provided as part of the planned construction of the village. Between Old Mammoth Road and the center of the village, the road should be four lanes, narrowing to two lanes farther south.

—A new 300' two-lane access road from the Minaret Extension between the southern edge of Snowcreek Village and the base lodge.



RECOMMENDED FUTURE STREET SYSTEM AND INTERSECTION CONFIGURATIONS

—Pavement and grading on Sherwin Creek Road, which is now gravel. The road would extend 2,050' from Old Mammoth Road to the base lodge turn-off.

—A 2,500' access road between Sherwin Creek Road and the base lodge.

—A parking area at Snowcreek Base with sufficient capacity for 1,300 autos and 30 tour buses.

—An estimated four buses to run about eight trips per hour between the town and the ski area during peak hours. Off-peak and weekday service would not be required.

Road Improvments Increased town traffic loads attributable to the Sherwin development could be mitigated by :

—Widening 1.2 miles of Old Mammoth Road between Meridian and Laurel Road to four lanes.

—At the Minaret Road/Main Street intersection, adding an exclusive right-turn lane on the northbound Minaret approach and widening southbound Minaret by one lane. Two exclusive left-turn lanes, one through lane and one shared through and right-turn lane should be created by restriping.

—At the Old Mammoth/Main Street intersection, widening the northbound Old Mammoth approach by one lane. This would provide one exclusive left-turn lane, one shared left- and right-turn lane, and one exclusive right-turn lane.

—At the Old Mammoth/Meridian intersection, adding an exclusive right-turn lane on northbound Old Mammoth; and widening both the east- and westbound Meridian approaches to provide a second exclusive left-turn lane.

—Installing a traffic signal at the Old Mammoth/Minaret intersection, if not provided as part of Snowcreek Village construction or the planned extension of Minaret Road.

3 CONSTRUCTION

All construction on National Forest lands is subject to project-level environmental and engineering review, based on final construction plans and schedules submitted by the permittee. Before construction begins, the following approvals must be obtained:

Base Facilities Plan This will be required for the entire ski area prior to any construction activity. The plan includes size, location and use of proposed facilities, along with pedestrian and vehicular traffic, parking, visual sensitivity, architectural style and landscaping considerations. The base facilities and garage will be equipped with fire sprinklers in accordance with NFPA guidelines.

Construction Plan Construction plans will meet the standards established under the special use permit. Specifically, all plans and specifications must be prepared by licensed architects and engineers in accordance with all applicable codes, regulations and standards, including:

—American National Standard Safety Requirements for Aerial Tramways (ANSI B77.1)
—Uniform Building Code
—Uniform Plumbing Code
—Uniform Mechanical Code
—National Electrical Code
—National Fire Protection Association guidelines
—Great Basin Air Quality Control District regulations
—Lahontan Water Quality Control District regulations

The regulations, codes and laws of all other agencies having jurisdiction over this project will also be observed.

All construction plans will include provisions for erosion control, soil stabilization and revegetation, according to USFS standards at the time of submission.

Trail and lift line designs will minimize straight line cutting, in favor of feathering techniques which retain the natural appearance to the greatest degree possibile. Designs that include snowmaking (if any) will define the techniques (wells, reservoirs, outside sources and use schedules) that will be used to provide water for this operation, and give maximum consideration to energy conservation measures and peak load shedding.

Cultural Resource Studies The archaeological reconnaissance survey identified several areas that require more intensive study before construction can take place on those sites. Such studies shall be in compliance with state and federal guidelines.

Deer Migration To ensure maximum protection of both fall and spring deer migrations, which vary from year to year, a comprehensive migration management schedule will be prepared and administered by the USFS Mammoth Ranger District.

Roads Roads will be built only where absolutely necessary, using techniques that are sensitive to the environment. There will be three classes of roads:

1 Base lodge access roads: The main base lodge and garage will have paved roads that meet the standards of the Town of Mammoth Lakes Public Works Department.

2 Summer construction roads: These will be unpaved roads constructed to USFS standards, and will serve all ski lodges and lift terminal structures.

3 Snow grooming and skier comeback roads: These roads may double as summer construction roads, and will be built to the same standards. Vehicular traffic would be limited to a defined area so that the remainder could be revegetated.

Ski Trails When completed, any manmade alternations to the natural environment will appear as similar to the adjacent terrain as possible. Trees will be felled so as to provide erosion and avalanche control, and removed only where ground disturbance can be avoided or where revegetation can be successful. Revegetation efforts will involve re-seeding with shrubs and grasses, mulching and fertilization as conditions require, and irrigation until the plants are established.

Ski Lifts Lifts will be placed to take advantage of natural elements, such as tree cover and ridges, to protect them from wind and reduce their visual impact. Potential avalanche hazard zones place rigid constraints on the lift alignments, placement of towers, and construction of defense berms and structures. Most lift towers will be set in place by helicopter to minimize environmental impact.


CAT

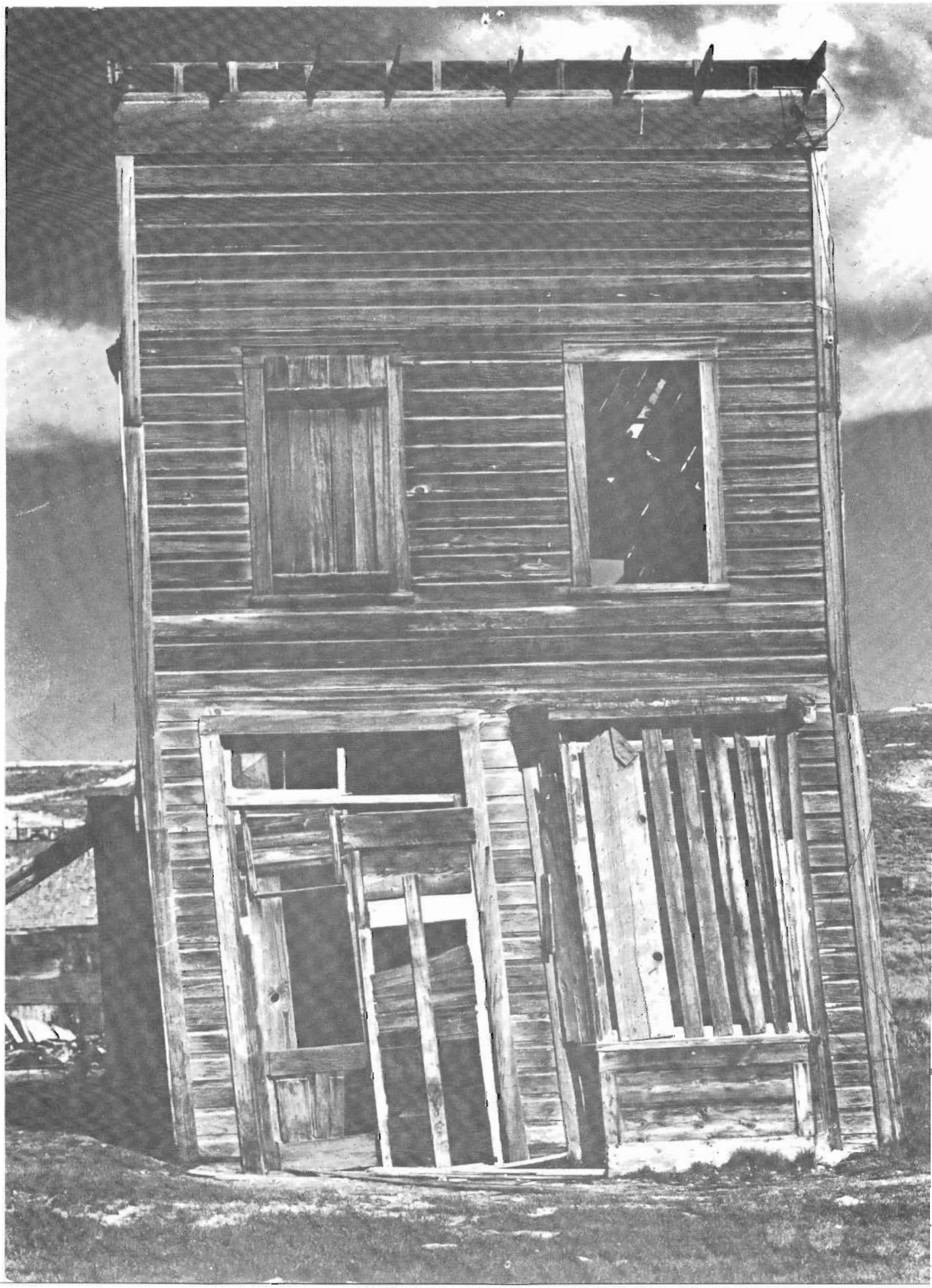
3 CULTURAL RESOURCES

The archaeological study was conducted September 1-10, 1985, under the direction of Mark Basgall, a senior research partner of the Far Western Anthropological Research Group. Robert Jobson was the field coordinator. A team of six researchers transected the 3,300-acre site at 30m intervals (50m on steeper slopes). Beyond searching for caves and rock shelters, they did not survey areas that had been disturbed by construction, or places that were too precipitous to approach. When items and sites of archaeological interest were found, the team sketched and photographed the site and recorded the information on forms compiled by the California Dept. of Parks and Recreation.

The study discovered nine prehistoric sites and 54 isolated finds within the Sherwin area. Three high-elevation sites in the southern portion of the study area (SC#2, SC#3 and SC#5), along with a fourth site near Mammoth Rock (SC#6), are thought to be ambush or retooling sites used by hunters. The remaining five sites are located at lower elevations along the northern boundary of the area. Of these, SC#4 and SC#8 are thought to be prehistoric base camps; SC#7 is interpreted as a stoneworking area; and SC#1 and SC#9 appear to have been retooling areas. Since the latter five sites are adjacent to currently occupied lands, it is possible that they have been pothunted or otherwise disturbed in varying degrees. Apart from three visible rock rings at one of the campsites, the artifacts found within the study area were limited to projectile points, stone tools, and flakes (a by-product of toolmaking).

Any of the alternatives could affect cultural resources. When final construction plans are drawn up, in the event that development is approved, impacts to all sites will be determined on the ground.

The study recommends that land-disturbing activities be avoided in the vicinity of the two prehistoric campsites (SC#4 and SC#8) unless and until further research can be completed. The other sites need to be thoroughly recorded and tested for subsurface remains to determine whether further studies are warranted prior to any land disturbance in their vicinities. Site-specific measures will depend on the design characteristics of the accepted alternative, and will be prepared by the Forest Cultural Resource Manager in consultation with the Office of Historic Preservation.



3 ECONOMICS

The financial feasiblity and market analysis for the Sherwin Ski Area was performed by Natelson, Levander & Whitney. Supplementary data used in the study was supplied by Ecosign and O'Connor Design Group.

The study assessed the financial feasibility of Sherwin Ski Area through computer models that examined the project's operations and estimated visitation rates. Economic impacts associated with population, employment and housing were projected, and the fiscal impacts on public services evaluated.

MARKET ANALYSIS

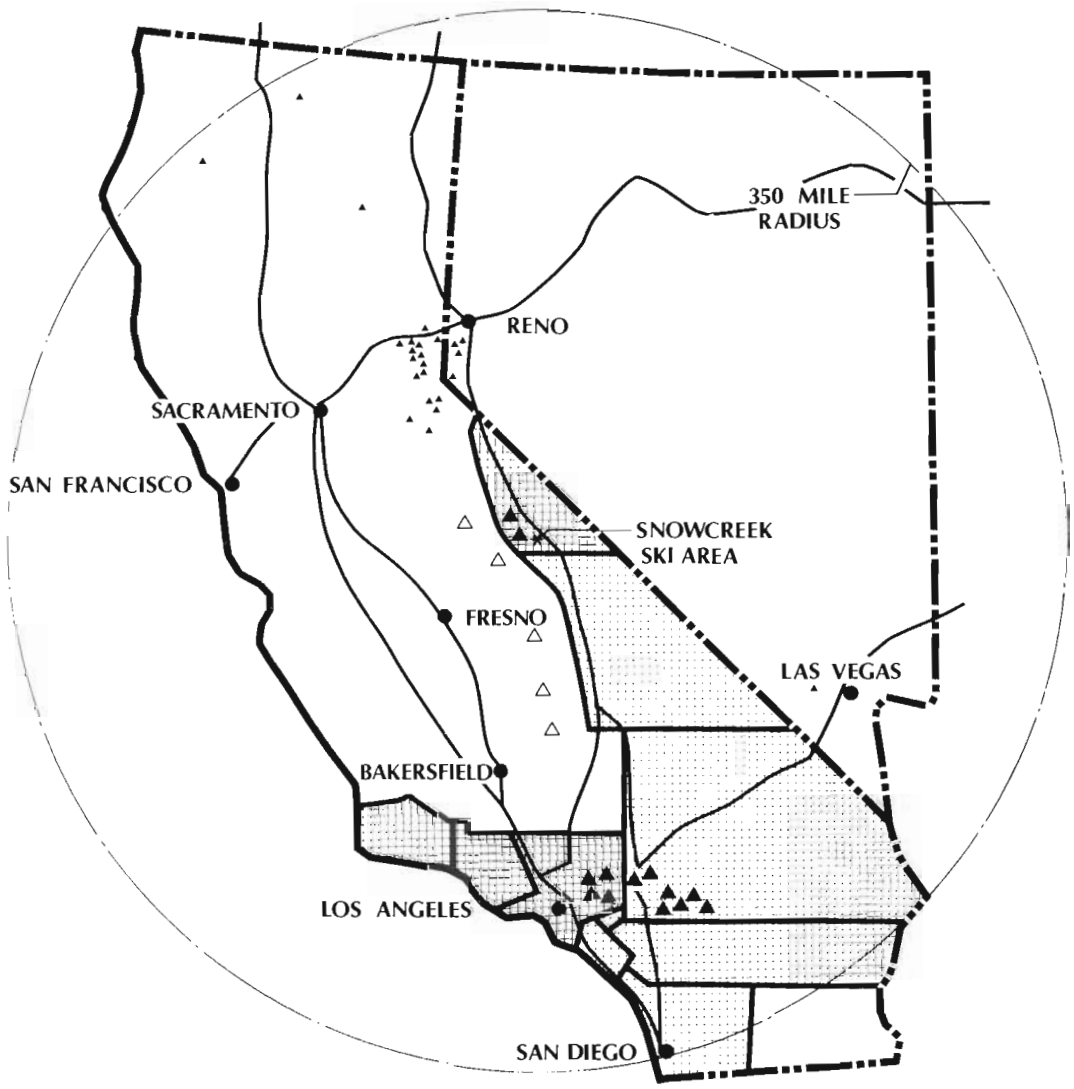
Visitation projections are based on a nine-county market area comprising Mono, Inyo, San Bernardino, Santa Barbara, Ventura, Los Angeles, Orange, Riverside and San Diego counties. This is the same market area that provides Mammoth Mountain with the largest annual visitation of any North American ski area. The current population of the market area is 14.9 million; by the year 2000, this number is expected to increase to 17.9 million.

The combined capacity of the ski areas presently serving the Southern California market area is 3.2 million skier days per year. Recent studies of skier participation indicate that the market area produces a demand of 5.4 million skier days per year, anticipated to increase to 6.5 million by 2000. Thus, the market now produces an excess demand of 2.2 million skier days per year, which is now being channeled off by outside ski areas or going unfulfilled.

Northern California, particularly the San Francisco Bay area, is a second major source of potential skier visits for Mammoth Lakes. This area currently provides the primary customer base for the Lake Tahoe ski areas. However, the generally better snow conditions and longer season at both Mammoth Mountain and the proposed Sherwin Ski Area mean that Mammoth Lakes could capture a significant share of this market. Air service between Mammoth Lakes and the Bay Area enhances access to this potential market.

FIGURE 1: 5 YEAR SUMMARY OF SKI AREA OPERATIONS

ALTERNATIVE	I	II	III	IV	V	VI	VII
GROSS FIXED ASSETS	16.352	35.073	49.166	20.223	33.803	46.651	35.547
TOTAL VISITATION	.951	1.913	2.923	.923	1.541	2.53	2.116
TOTAL OPERATING REVENUES	30.676	63.681	96.088	29.824	50.852	82.620	72.018
NET OPERATING REVENUE	26.954	56.194	84.648	26.210	44.822	72.720	63.736
TOTAL OPERATING EXPENSES	20.650	38.692	52.859	21.871	34.575	45.146	38.487
NET OPERATING INCOME	6.303	17.502	31.789	4.339	10.247	27.574	25.249
CAPITAL EXPENSES & TAXES	10.371	19.878	28.216	12.508	18.472	24.992	16.513
PROFIT OR LOSS	(4.068)	(2.376)	3.573	(8.169)	(8.225)	2.583	2.174
DEPRECIATION	3.467	6.269	7.860	4.216	6.226	7.333	6.569
NET CASH FLOW	(0.601)	3.893	11.433	(3.953)	(2.000)	9.916	8.743
5 YEAR RATE OF RETURN	- 5.4%	19.8%	55.1%	- 49.9%	- 17.6%	84.4%	55.3%



Market Area
Ski Areas Within Market Area ▲
Ski Areas Peripheral To Market Area △
Additional Ski Areas ▲

MARKET AREA

Conclusions The analysis indicates that the Southern California ski market demand greatly exceeds the current and projected supply of skier days. This differential is far in excess of that needed to justify market support for the new ski area. The immensity of the the Southern California market should enable the Sherwin project to achieve aggressive utilization rates, beginning with the first year of operation.

METHODS

Two approaches were used to pre-evaluate the feasibility of the seven alternatives. The first approach examined a single operating year at full development, at skier utilization rates of 20%, 40% and 60% as requested by the USFS. The second approach projected operations for the first five years at utilization rates deemed achievable under current market conditions.

Model 1 used a set of pro forma income statements depicting "steady-state" operations following the fifth season of operation. Ecosign and O'Connor Design Group supplied the operating revenues and expense projections. At USFS request, feasibility was evaluated at 20%, 40% and 60% utilization rates. Revenues, costs and expenses were calculated as follows:

Operating Revenues are based on lift capacity and length of season. From these figures, the number of annual skier visits can be determined; this number is multiplied by a 1987/88 ticket price of $25 to produce total revenues. Total revenues are then reduced by a factor of 25% to account for discount and complimentary passes. Support revenue, such as ski school and food service, are calculated as a percentage per skier visit. Total ski area revenues are a total of ticket sales and support revenues.

Projected ticket prices and the factor used to account for sales discounts are in accord with current industry standards. Percentages and operating margins for support revenue items are consistent with figures published by the University of Colorado in their *1985 Economic Analysis of North America Ski Areas.*

Operating Costs are based on research at other western US and Canadian ski areas. Cost items are listed as a percentage of total revenue. According to the University of Colorado study, the 1985 industry average was 14 to 20% of total revenues.

FIGURE 2: SUMMARY OF ECONOMIC IMPACTS, 1987/88 - 1991/92

Source: Nateslon Levander Whitney

	I	II	III	IV	V	VI	VII
MAMMOTH LAKES							
Total Revenues Generated	30,735,724	63,801,627	96,271,528	29,882,281	50,948,354	82,779,419	72,150,964
Net Population Increase							
Permanent	11	22	33	11	22	33	23
Seasonal	73	146	217	71	146	221	149
FTE Employment Generated							
Permanent	17	34	51	17	34	52	35
Seasonal	51	103	153	50	103	155	104
Net New Housing Demand	18	36	53	17	36	54	36
Net Student Increase	2	5	7	2	4	7	5
MONO COUNTY							
Net Population Increase							
Permanent	3	12	10	3	7	10	7
Seasonal	7	14	21	7	14	21	14
Net New Housing Demand	2	5	7	2	5	7	5
Net Student Increase	1	1	1	1	1	2	1
INYO COUNTY							
Net Population Increase							
Permanent	10	20	30	10	20	30	21
Seasonal	7	16	24	8	16	24	16
Net New Housing Demand	5	9	14	4	9	14	9
Net Student Increase	2	4	6	2	4	6	4

Depreciation expenses were calculated in a straight-line method using a 10-year depreciable asset life. Salvage value was set at 15%.

Debt service calculations presume that 60% of the total investment is financed at 12% annual interest, with an amortization schedule based on a 20-year payback.

Income taxes are based on a 46% tax rate.

Conclusions Under this model, all seven alternatives show an after-tax loss at 20% utilization. At 40%, cash flow improves substantially, though
Alternatives I, II, IV, and V would be marginal. At 60%, cash flows improve substantially, and Alternative III shows the highest return on equity at 26.4%.

As an indicator of the project's financial performance, this model is limited due to its focus on only the fifth year of operation. Though it provides a useful comparison of alternatives, it does not adequately evaluate financial feasibility from an investment perspective, nor provide enough information for an economic and fiscal impact analysis. These limitations made it desirable to create a second model.

Model 2 incorporates visitation projections with the revenue and expense item projections used in the first model, resulting in a model that facilitates comparison of the alternatives over five years of operation, instead of just one.

Total annual skier visits per lift are determined by multiplying the product of lift SAOT and lift season length by the utilization rate. The sum of skier visits per lift gives the skier visits per construction phase, which equals the total annual skier visits per alternative. At Sherwin Ski Area, it is anticipated that skier utilization will increase significantly over the first five years, stabilizing at a level similar to that of neighboring Mammoth Mountain, which averages 55% per season. Projected visitation growth for the Sherwin project is shown below:

Alternative	Year 1	Year 5
I	75,389	253,495
II	66,610	588,982
III	93,517	965,631
IV	57,080	250,784
V	86,258	438,247
VI	90,463	807,430
VII	89,531	627,417

Conclusions Combining the visitation rates with the O'Connor and Ecosign data used in Model 1 yielded the basic financial performance data presented in Figure 1, Summary of Ski Area Operations.

ECONOMIC IMPACTS

This analysis is based on the number of annual skier visits produced by each alternative during the five-year study period. Visitation figures determine the total revenues generated by the project, and provide the starting point from which economic impacts are determined.

Impacts on Mammoth Lakes' private sector and on the Mono and Inyo county economies are summarized in Figure 2, Summary of Economic Impacts.

Total Gross Revenues generated by the proposed projects were based on projected annual skier visits and revenue per skier visit factors published by the University of Colorado.

Population Increases in population were determined largely from ski area employee requirements, which will involve both permanent and seasonal employees. Given the current shortage of supply in the local labor market, it is estimated that 75% of the permanent positions and 90% of seasonal employment will be filled by out-of-area or "net new" employees. The labor force participation rate factor, which adjusts total population to include dependents of new employees, is estimated at 70% of Mammoth Lakes' population.

Employment Peak employment figures for each alternative were developed by Ecosign. To determine the actual number of new jobs created, the peak employment projections (which represent the total number of employees on the ski area payroll during the peak season) have been converted into standard full-time equivalents (FTEs).

Earnings Employee earnings were also projected by Ecosign. These estimates were combined with the FTE employment projections to determine the average annual income per FTE employee. Using these estimates and the FTE figures above, the annual average income under each alternative would be:

Alternative	Average Annual Income
I	$13,474
II	13,931
III	13,508
IV	14,604
V	15,460
VI	13,585
VII	13,824

Employee Housing Increases in both permanent and seasonal population from the Sherwin project will create a significant

demand for new housing. The distribution of these new residents was projected from recent housing studies conducted in the Mammoth Lakes area. It is likely that the majority of seasonal employees will locate in Mammoth Lakes, while a portion of permanent employees may settle in outlying communities. The population distribution pattern was combined with assumptions about the average number of people per bedroom and average number of bedrooms per unit to estimate the additional housing demand in the area's primary and secondary housing markets.

Schools Ski areas historically have young employees with few school-age dependents. Recently, however, Mammoth Mountain has attempted to recruit more a more stabilized, permanent workforce, creating an acute increase in school enrollments in the area. The Sherwin Ski Area workforce is also projected to have more children than is common in the ski industry, further increasing local school enrollments. A ratio of one school-age child per ten employees was applied to the total number of employees at Sherwin under each alternative.

In the Town of Mammoth Lakes, development of Sherwin Ski Area would generate a minimum of two and a maximum of seven new school-age children. In Mono County, excluding Mammoth, the proposed project should generate no more than two addtional school-age children. The Inyo County schools would receive between two and six additional school-age children.

SUMMARY OF FISCAL IMPACTS

The amount of incremental costs and revenues on affected agencies and jurisdictions were estimated for each alternative. The Town of Mammoth Lakes is the primary affected jurisdiction, with secondary effects on Mono and Inyo counties. The net fiscal impacts on these three entities under each alternative are summarized in Figure 4.

The visitation projections discussed above were used in conjunction with the visitation projections for neighboring Mammoth Mountain to determine the total visitation attributable to the concurrent operation of both ski areas. It was assumed that a percentage of the Mammoth Mountain customer base would "cross over" to contribute to Sherwin's annual visitation. It is projected that the amount of crossover would decline to about 5% of Sherwin's annual visitation by the fifth year of development.

Possessory Interest Tax The Sherwin site occupies approximately 3,300 acres of public land currently administered by USFS. The ski area will be subject to an annual possessory interest tax payable to Mono County, which then distributes it to various jurisdictions. Among these jurisdictions are Town of Mammoth Lakes, Mammoth Lakes Unified School District and Mammoth Lakes Fire District.

Possessory Interest Tax payments are calculated at 1.05% of the total land area market value, which is equal to the market value of the land plus the total capital budget of the facilities. In the initial year of operation, possessory interest tax payments depend on the percentage of total development completed. The amount of money generated under each alternative for Mammoth Lakes, Mono County and Inyo County at full development is shown in Figure 4.

Sales Tax Gross revenues from food and beverage service and retail sales at the ski area are subject to the 6% California sales tax. 5% of total taxable sales generated goes to the State, with the remaining 1% accruing to Mammoth Lakes. Therefore, 1% of Sherwin's gross revenues from food, beverage and retail sales will go to the city. Annual town revenues from this source under each alternative are shown in Figure 4.

Forest Reserve Fees Ski area operations at Sherwin will generate revenues for the USFS in the form of annual use fees. In turn, the Forest Service returns 25% of total forest revenues to the counties in which these revenues were generated. These fees are allocated on the basis of the acerage of national forest within the affected counties.

Mono and Inyo counties are the only agencies affected by the proposed project. Each recieves 42% of Inyo National Forest allocations. As seen, most of the INF revenue is generated by recreation—primarily MMSA use fees. Since Sherwin would increase the amount of annual use fees received by Inyo National Forest, it would also increase the amount of money returned by the USFS to the counties. Based on a USFS use fee factor of 2.5%, the additional revenues to Mono and Inyo counties resulting from Sherwin are shown in Figure 4.

Fire Protection The major portion of fire protection responsiblities for the Sherwin site currently belong to USFS. A small percentage of the site is also included within the Mammoth Lakes Fire Department district.

Efforts are currently underway to extend the MLFD boundaries to encompass the entire Town of Mammoth Lakes, which would bring the entire ski area within the local fire jurisdiction. If this boundary change is realized, the Sherwin development will be subject to a one-time mitigation fee charged to all new land developments within fire district boundaries. The fee is assessed at a rate of 30

cents per square foot of common area constructed. The fee for each alternative is shown in Figure 4.

In the summer of 1986, MLFD will begin construction of a second fire station immediately adjacent to the project site.This facility would give local firefighters the ability to respond instantly to calls in the Sherwin base area. (A complete discussion of fire prevention resources available to the ski area can be found on page 68.)

Law Enforcement Though many on-site law enforcement responsiblities will be borne by a private ski area security staff, the Sherwin development will affect outside law enforcment agencies in the region.

Police Police protection for the area will be provided under contract with the Mono County Sheriff until July 1, 1986, when the Mammoth Lakes Police Department will begin service. The increase in skier visits due to Sherwin will have a significant impact on law enforcement services, necessitating increased manpower. The cost of providing these additional officers will be borne by the Town of Mammoth Lakes. The annual cost of providing a single new police officer, including salary and benefits, is $39,600 in 1987 dollars. The city will incur another $2,000 per officer for supplies and equipment. Finally, police department officials maintain that with every third additional officer hired, another patrol vehicle must be acquired, at $15,000 per vehicle.

Reserves In addition to new full-time officers, local officials have indicated that additional staff will be needed during winter weekends and holidays. The officials have

FIGURE 4: SUMMARY OF FISCAL IMPACTS, 1987/88 - 1991/92

Source: Nateslon Levander Whitney

	I	II	III	IV	V	VI	VII
MAMMOTH LAKES							
Net Increase in Visitation	828,549	1,693,198	2,598,097	806,560	1,351,676	2,240,377	1,865,242
Revenues:							
Sales Tax Revenue	65,816	132,392	202,275	63,901	106,610	175,047	146,436
Possessory Interest Tax Revenue	37,163	64,891	79,824	43,555	63,352	74,660	69,504
Fire District Mitigation Fees	12,180	24,330	36,509	19,529	24,330	36,511	24,330
Frachise Fees, Waste Disposal	1,839	2,952	3,944	1,800	3,052	3,876	3,089
Total Revenues	116,998	224,565	322,552	128,785	197,344	290,094	243,359
Costs:							
Fire/Paramedic Services	0	0	0	0	0	0	0
Police Protection	41,600	195,700	224,000	41,600	195,700	224,000	195,700
Public Works	42,720	51,533	58,690	60,480	96,515	107,837	36,194
Total Costs	84,320	247,233	282,690	102,080	292,215	331,837	231,894
Net Fiscal Surplus (Deficet), Mammoth Lakes	32,678	(22,668)	39,862	26,705	(94,871)	(41,743)	11,465
MONO COUNTY							
Revenues:							
Possessory Interest Tax Revenue	1,201,589	2,098,153	2,580,982	1,408,267	2,048,386	2,414,013	2,247,309
Forest Reserve Fees	321,111	666,567	1,005,797	312,195	532,283	864,838	753,797
Fines & Citations Revenue	113,926	232,815	357,238	110,902	185,855	308,052	256,471
Total Fiscal Impact, Mono County	1,636,626	2,997,535	3,944,017	1,831,364	2,766,524	3,586,903	3,257,577
INYO COUNTY							
Revenues:							
Forest Reserve Fees	321,957	668,322	1,008,444	313,017	533,684	867,114	755,781
Fines & Citations Revenue	106,966	218,592	335,414	104,127	174,501	289,233	240,803
Total Fiscal Impact, Inyo County	428,922	886,914	1,343,859	417,144	708,185	1,156,347	996,584

Figures noted above represent cumulative totals for a 5 year period, 1987-1992

proposed a reserve program that would employ trained local citizens on a predominately volunteer basis. Implementation of this program is likely with or without the Sherwin project, though the ski area would increase the need for it. According to the MLPD, the minimal costs associated with this program are not accurately attributed solely to Sherwin development.

Police department officials have developed a schedule of additional personnel and equipment requirements based upon the Sherwin skier visitation projections. Their estimates of the ski area's fiscal impact under each alternative are shown in Figure 4.

Highway Patrol The California Highway Patrol is responsible for traffic law enforcement on state highways and county roads in unincorporated areas. In Mammoth Lakes, they patrol US 395, and State Route 203 between US 395 and the town boundary. As a state agency, the CHP will not be directly affected by the Sherwin development. CHP operating revenues are drawn from statewide vehicle registration fees. The agency has stations in Independence, Bishop and Bridgeport, and a resident facility in Crestview, 10 miles north of Mammoth Lakes along US 395.

The ski area will not have a direct impact on the California Highway Patrol, since the CHP is a state agency that does not operate from a local jurisdiction. However, part of the funds generated by CHP traffic citations are returned to the county of origin. Due to projected traffic increases resulting from Sherwin development, both Mono and Inyo counties will realized increased revenues from this source. The estimated additional revenue under each alternative is shown in Figure 4.

Public Works Under the various alternatives, between 1.82 and 3.65 miles of new road would be constructed to provide access to the ski area. These roads would initially be considered to be private, with maintenance and repair costs borne by the developer. Eventually, however, they could become public, with maintenance and repair responsibilities shifting to the city.

Care of these roads includes normal patching, sealing and culvert cleaning, plus periodic chip seal and asphalt overlay, at a cost ranging from $6,000 to $12,000 per year per mile of road. As at Mammoth Mountain, snow removal responsiblity for roads leading to the site would be borne by the developer. Figure 4 gives the public road maintenance costs accruing to the town over the five-year projection period.

Solid Waste Disposal Through a franchise agreement with the Town of Mammoth Lakes, a private disposal company handles all solid waste removal within town limits. This agreement is subject to annual review. The operator pays 2.5% of gross revenues to the town as a franchise fee. Projected solid waste generation figures, along with methods of disposal, are discussed in the Utilities chapter.

Gross revenues equal about $3.00 per cubic yard of solid waste collected. The revenue projections in Figure 4 were based on discussions with disposal company officials.

Medical Care There are no municipally-funded medical facilities within Mammoth Lakes. The town's only hospital, Centinela Mammoth Hospital, is a private non-profit corporation independent of any governing body, currently operating under a ten-year lease from the Southern Mono Hospital District. Centinela receives no funds from any city or county government.

The hospital is located 1.5 miles from the development site, and is the primary provider of emergency medical care in southern Mono County. Facilities include 15 full-care beds and a 1,000 square-foot emergency room capable of handling eight cases simultaneously. Ten full-time physicians are supported by a 60-person administration and nursing staff. Under a recent master plan, facilities could be expanded to a total of 40 full-care beds.

In 1985, Centinela Mammoth Hospital accommodated 1,181 in-patient visits and 5,064 emergency care visits. 66% of the emergencies occured during the November to April ski season. Hospital officials estimate that 70% of all ski season emergency visits occur on weekends.

Officials state that the hospital's current and projected capacities are sufficient to meet increased demands resulting from the Sherwin project.

Under the proponents' preferred Alternative, an "urgi-care" medical facility would be constructed at Snowcreek Base Lodge. This facility would place licensed medical personnel on site during the ski season. The plan would benefit ski area guests and employees by providing immediate access to medical care, while placing no additional costs on the community.


MAMMOTH LAKES
VILLAGE
YEAR ROUND RESORT
Next Exit

APPENDICES 4

4 APPENDIX A

PAST STUDIES

YEAR	STUDY	In USFS Files?
1965	U.S.F.S. Inventory List - Initial Study John Harmining	Yes
1965-69	Ski Area Site Surveys - Memos John Harmining	Yes
1969	Multiple Use Survey Report - Stage I John Harmining	Yes
1969	Sherwin Bowl Preliminary Terrain Analysis Nelson Bennet for Dave McCoy	Yes
pre-1970	Sherwin Bowl Analysis	Yes
pre-1970	Analysis of Commercial Retail Potentials Economic Research Associates (ERA)	Yes
pre-1970	Potential Ski Area Layout John Harmining and Dick Austin	Yes
1970	Sherwin Creek Water Quality Analysis	Yes
1970	Forest Supervisor's letter on impact survey	Yes
1970	Sherwin Deer Herd - 16 year deer harvest record	Yes
1970	Public Meeting notes, John Harmining & the Sierra Club	No*
1971	Deer Use Study Anderson and Dunaway	Yes
1971	Wildlife Resources in the Proposed Sherwin Bowl Ski Area	Yes
1971	Wildlife Habitat Surveys and Recommendations	Yes
1971	Soils-Hydrologic Survey of the Proposed Sherwin Ski Area Charles McDonald	Yes
1971	Sherwin Bowl Winter Sports Area Proposal James Shiro	Yes
1972	Site Capacities John Harmining	Yes
1972	Sherwin Bowl Geologic Study John Harmining	No*

1973	An Ecological Baseline Survey of Sherwin Bowl Ski Area Carl Sharsmith	Yes
1973	Ski Resource Report on Sherwin, San Joaquin & White Wing unsigned report; John Harmining	Yes
1974	Sherwin Bowl Ski Area Capacity Estimates Proposal John Harmining and Dick Austin	Yes
1974	Sherwin Bowl Archeological Evaluation Ruth Simpson	Yes
1975	Sherwin Area Snow Depth Report	Yes
1977	Winter Recreation District Proposal, Mammoth/June Lake Region Special Report O'Connor Associates/Wallace, McHarg, Roberts & Todd	Yes
1977	Ski Resource Report , 1973 Dick Austin	Yes
1978	Mammoth Mountain Master Plan Alternatives Allan O'Connor	Yes
1978	USDA Forest Service Final Environmental Statement Mammoth Land Management Plan, Mono Planning Unit	Yes
1979	Lower Sherwin Base Area Wind Records	Yes
1979	USDA/Forest Service Expansion of Mammoth Mountain Ski Area Environmental Analysis Adams, Rice, and Serino	Yes
1980	Sherwin Bowl Wildlife Srurvey Tina Hargis and Joanne Schneider	Yes
1980	Sherwin Bowl, Ski Area Study #1 Carl Martin	Yes
1981	USFS Inyo National Forest, Mammoth Ranger District Rock Compartment Wildlife Report	Yes
1981	CALVEG- A Classification of Californian Vegetation USFS Regional Ecology Group, San Francisco	No*
1982	USFS Uncirculated Analysis of Management Situations	Yes
1982	Monoplan Baseline Analysis, Vol. 1 QUAD Consultants for Mono Co.	Yes
1982-83	Wind and Snow Survey Carl Martin	Yes
1984	Economic Analysis of Sherwin Bowl Ski Area Christensen & Wallace for Allan O'Connor	Yes
1984	Sherwin Bowl Ski Area Heli-Skiing Report	Yes
1984	Mule Deer Migration Patterns Near Sherwin Bowl L. White	Yes

* Unable to locate document

4 APPENDIX B

LEAD AGENCY

UNITED STATES FOREST SERVICE
Inyo National Forest
871 North Main Street
Bishop, CA 93514
619 873 5841

Leon R. Silberberger
Acting Forest Supervisor

John Ruopp
Recreation Officer

Mammoth Ranger District
P.O. Box 148
Mammoth Lakes, CA 93546
619 934 2505

Dean McAlister
District Ranger

Robert Wood
Winter Sports Specialist

PROPONENTS

Allan O'Connor, AIA
O'Connor Design Group, Inc.
P.O. Box 1717
Mammoth Lakes, CA 93546
619 934 4192
Allan O'Connor, Principal. Architects, engineers and planners specializing in ski and recreation area design.

Tom Dempsey
Dempsey Construction Corporation
P.O. Box 657
Mammoth Lakes, CA 93546
619 934 6861
Tom Dempsey, President. Dempsey Construction Corp. specializes in resort condominium projects in four western states.

CONSULTANT TEAM

ALTERNATIVES DESIGN

USFS
Robert Wood, Winter Sports Specialist

O'Connor Design Group
Allan O'Connor, AIA

Sno-Tek
Mt. Shasta Ski Area
P.O. Box 238
Mt. Shasta, CA 96067
916 926 4033
Carl Martin, Ski Area Design Consultant

Ecosign
P.O. Box 63
Whistler, BC Canada VON IBO
604 932 5976
Paul Mathews, President

STUDIES

CLIMATE
USFS
Robert Wood, Winter Sports Specialist
Carl Martin
John Harmening

O'Connor Design Group
Allan O'Connor, AIA

LAND USE
USFS
Dean McAlister, District Ranger
Dave Marlow, Lands Officer

O'Connor Design Group
Allan O'Connor, AIA

AVALANCHE

USFS

Robert Wood, Winter Sports Specialist

Norman Wilson
PO Box 8010
Truckee, CA 95737
916 587 1593
Avalanche Control Consultant

GEOLOGY

USFS

Vern McLean, Geologist

The Morro Group
362 Travis Drive
Los Osos, CA 93402
805 528 2187
Don Asquith PhD , Registered geologist, engineering geologist, and geophysicist

SLOPE ANALYSIS

USFS

Robert Wood, Winter Sports Specialist

O'Connor Design Group
Allan O'Connor, AIA

WATER

USFS

Mark Clark, Hydrologist
Tom Felando, Hydrologist

Triad Engineering
PO Box 1570
Mammoth Lakes, CA 93546
619 934 7488
Jim Ognisty, Principal, Civil Engineer

Bill Hutchison
1473 Rocking W Drive
Bishop, CA 93514
619 873 4241
Hydrologist

VEGETATION

USFS

Carroll Albert, Wildlife Biologist

Thomas Kucera
Dept of Forestry & Resource Management
University of California
Berkeley, CA 94720
PhD candidate in Wildlife Biology, University of California at Berkeley
Timothy Taylor, Research Assistant

NOISE

USFS

Jim Cooper, Range, Wildlife & Watershed Officer

J.J. Van Houten
1260 East Katella Avenue
Anaheim, CA 92805
714 635 9520
Noise Control Consultant

WILDLIFE

USFS

Jim Cooper, Range, Wildlife & Watershed Officer
Pat Stygar, Wildlife Biologist
Clint McCarthy, Wildlife Biologist

Thomas Kucera
PhD candidate in Wildlife Biology, University of California at Berkeley
Timothy Taylor, Research Assistant

Enterprise/Environment
1727 Rangeview
Fort Collins, CA 80524
303 484 4122
Fred Glover PhD, Certified Senior Ecologist, Certified Wildlife Biologist

Russell Mohr
P.O. Box 849
Lebec, CA 93243
805 248 6651

UTILITIES

USFS
Robert Wood, Winter Sports Specialist

Mammoth Mountain Ski Area
P.O. Box 353
Mammoth Lakes, CA 93546
619 934 2571
Mike Beirman

Lift Engineering
2400 Arrowhead Drive
Carson City, CA 89201
702 882 0660
Yan Kunczynski, President

VISUAL ANALYSIS

USFS
Ted Rickford, Landscape Architect
Jeff White, Landscape Architect

AIR QUALITY

USFS
Jim Cooper, Range, Wildlife & Watershed Officer

Hans Giroux
26 Sunriver
Irvine, CA 92714
714 786 0782
Air Pollution Control Consultant; PhD candidate in meterology, University of California at Los Angeles

TRANSPORTATION

USFS
Dean McAlister, District Ranger

Kaku Associates
1427 Santa Monica Mall, Suite 201
Santa Monica, CA 90401
213 458 9916
Dick Kaku, Civil Engineer
Tom Gaul, Civil Engineer

CONSTRUCTION

USFS
Robert Wood, Winter Sports Specialist

O'Connor Design Group
Allan O'Connor, AIA

CULTURAL RESOURCES

USFS
Linda Reynolds, Archaeologist

Far West Anthropological Research Group, Inc.
PO Box 413
Davis, CA 95617
916 756 3941
Mark Basgall , PhD candidate in archaeology, University of California at Davis. Principal and senior partner
Robert Jobson , Anthropologist

ECONOMIC & MARKET ANALYSIS

USFS
Sam Dennis, Social Economist
Bruce Dalley, Auditor

Natelson Levander Whitney
10960 Wilshire Blvd. Suite 222
Los Angeles, CA 90024
213 478 5017
Bill Whitney PhD , Principal
John Skjervem , Economist

Ecosign
P.O. Box 63
Whistler, BC Canada VON IBO
604 932 5976
Paul Mathews, President

Christiansen & Wallace
P.O. Box 2086
Oceanside, CA 92054
619 722 1177
Fred Christiansen, Principal
Patricia Wallace, Principal

DOCUMENT PRODUCTION

Reeder, Writer
1365 Todd Street
Mountain View, CA 94040
415 962 1450
Sara Reeder , editor & writer

O'Connor Design Group

Kathy Emerick, Coordinator
Shari Mohn
Jack Mohn
Corinne Brown
Tom Mahaffey
Allan O'Connor
Fred Patrick
Elliot Brainard
Susie Walczak
Sam Ortiz