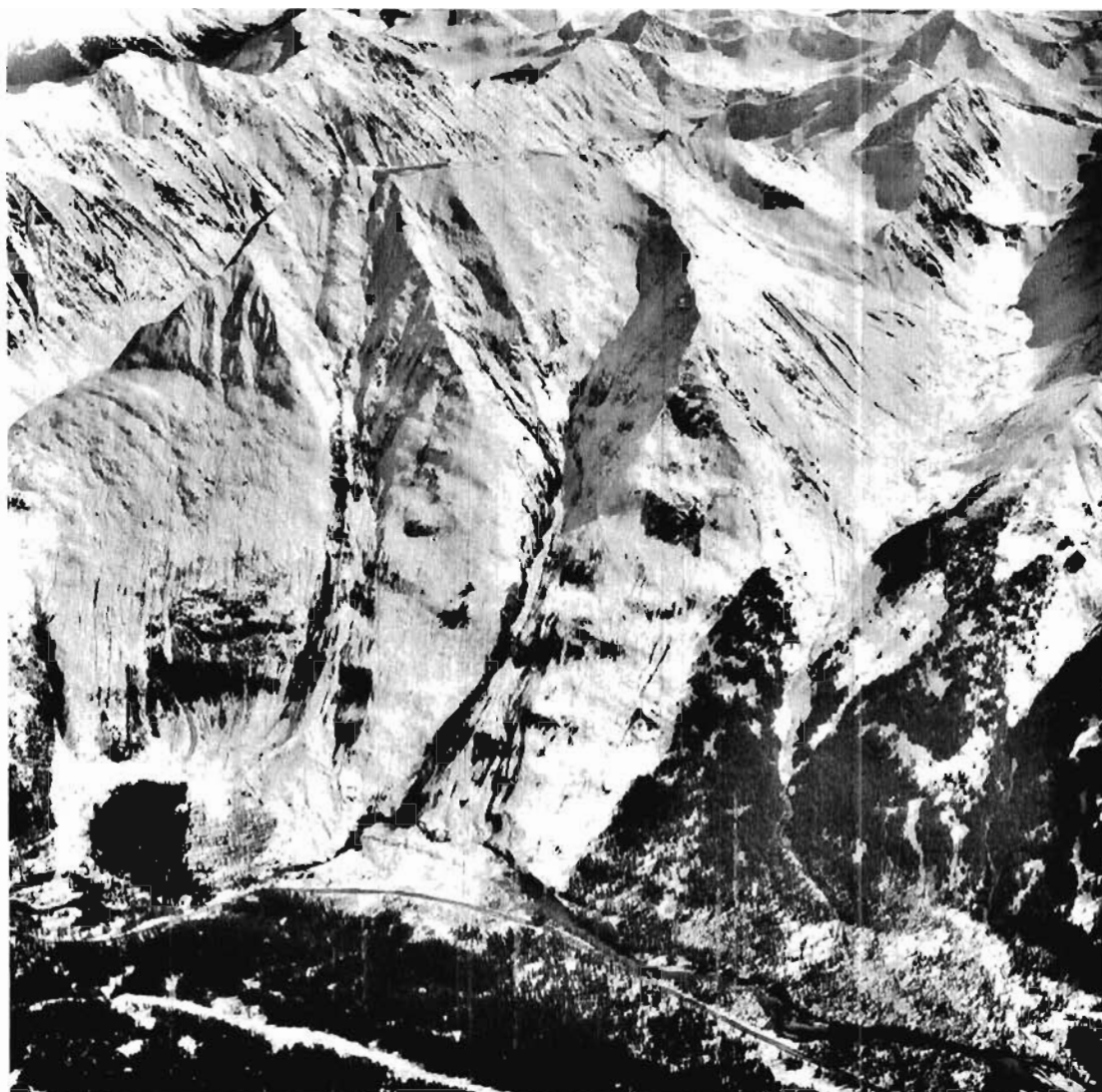


STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES

PROFESSIONAL REPORT 81



SNOW AVALANCHE ATLAS, SEWARD HIGHWAY, SOUTH-CENTRAL ALASKA

By
G.D. March and L.G. Robertson

Published by
DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS
ROSS G. SCHAFF
STATE GEOLOGIST

STAFF

Ross G. Schaff, State Geologist

W.W. Barnwell and W.G. Gilbert, Deputy State Geologists

D.D. Adams, Geological assistant
M.D. Albanese, Geological assistant
R.D. Allely, Geological assistant
M.A. Armstrong, Publications specialist
M.R. Ashwell, Minerals laboratory technician
B.G. Baldwin, Clerk typist
E.E. Becia, Planner
T.A. Benjamin, Chemist
D.L. Bertossa, Geological assistant
J.M. Bird, Clerk-typist
M.E. Brown, Land management officer
T.K. Bundtzen, Geologist
C.D. Burgess, Clerk-typist
L.E. Burns, Geological assistant
S.J. Carrick, Hydrologist
S.L. Chambers, Clerk-typist
M.S. Christy, Geologist
R.A. Clay, Hydrologist
J.G. Clough, Geological assistant
E.J. Collazzi, Geological assistant
R.A. Combellick, Geologist
P.L. Coonrod, Secretary
N.W. Crosby, Operation's research analyst
C.L. Daniels, Publications specialist
N.L. Dann, Clerk-typist
J.N. Davies, Geologist
L.L. Dearhorn, Hydrologist
J.E. Decker, Geologist
J.T. Dillon, Geologist
R.G. Dixon, Archaeologist
G.R. Eakins, Geologist
S.V. Garbowski, Geologic information technician
D.E. Gibson, Archaeologist
J.J. Hansen, Geophysicist
S.B. Hardy, Geological assistant
M.W. Henning, Geologist
B.S. Hurtig, Systems analyst
C.E. Holmes, Archaeologist
M.G. Inghram, Hydrologist
R.W. Ireland, Geologist
S.A. Jacques, Cartographer
J.T. Kline, Geologist
S.L. Klingler, Archaeologist
R.W. Kornbrath, Geologist
K.J. Krause, Geologist
D.L. Krouskop, Geophysicist
G.M. Laird, Cartographer
E.M. Lamey, Administrative assistant
G.E. LaRoche, Geological assistant
F.L. Larson, Publications specialist
T.A. Little, Geologist
W.E. Long, Hydrologist

W.M. Lyle, Geologist
C.L. Mahan, Accounting technician
R.A. Mann, Clerk
G.D. March, Geologist
M.A. Maurer, Hydrologist
G.A. McCoy, Hydrologist
D.L. McGee, Geologist
R.D. Merritt, Geologist
J.F. Meyer, Geophysicist
G.W. Mishler, Archaeologist
W.H. Mitchell, Jr., Geological assistant
M.A. Moorman, Geologist
R.J. Motyka, Geologist
C.G. Mull, Geologist
J.A. Munter, Hydrologist
D.J. Mursch, Clerk-typist
J.N. Newgaard, Accounting technician
C.R. Nichols, Geologist
K.S. Pearson, Cartographer
G.H. Pessel, Geologist
F.H. Pitts, Administrative officer
M.K. Polly, Mineral laboratory technician
M.E. Pritchard, Cartographer
S.E. Rawlinson, Geologist
J.W. Reeder, Geologist
D.R. Reger, Archaeologist
R.D. Reger, Geologist
V.L. Reger, Clerk-typist
M.S. Robinson, Geologist
L.C. Schell, Cartographer
R.D. Shaw, Archaeologist
J.A. Sigler, Clerk
T.E. Smith, Geologist
T.N. Smith, Geologist
D.J. Solie, Geologist
D.R. Stein, Chemist
R.O. Stern, Archaeologist
C.H. Stevenson, Geologic information technician
M.J. Stroebale, Clerk-typist
A.G. Sturmman, Drafting technician
R.W. Stuvek, Land management technician
B.A. Syvertson, Clerk-typist
C.A. Ulery, Geological assistant
R.G. Updike, Geologist
N.C. Veach, Chemist
R.D. Wallace, Operations research analyst
J.L. Weir, Clerk-typist
S.M. Weum, Geophysicist
D.M. Wietchy, Land management officer
B.K. Wilson, Geological assistant
M.A. Wiltse, Chemist
G.M. Zartman, Clerk

PROFESSIONAL REPORT 81

SNOW AVALANCHE ATLAS, SEWARD HIGHWAY, SOUTH-CENTRAL ALASKA

By
G.D. March and L.G. Robertson



COLLEGE, ALASKA
1982

STATE OF ALASKA

William J. Sheffield, *Governor*

John W. Katz, *Commissioner, Dept. of Natural Resources*

Ross G. Schaff, *State Geologist*

Cover photo: *Boston Bar avalanche path, 17 mile Hope Road. View to east. (Photo courtesy of Larry Mayo, U.S. Geological Survey.)*

For sale by Alaska Division of Geological and Geophysical Surveys, P.O. Box 80007, College, 99708; 3601 C St. (10th floor), Anchorage, 99503; P.O. Box 2438, Ketchikan, 99901; and 230 S. Franklin, Juneau, 99811. Cost: \$10.

CONTENTS

	Page
Introduction	1
Previous work	1
How the data were compiled	1
Climate	1
Avalanches	1
Avalanche control	1
Definition of terms used in avalanche-path summaries	1
Acknowledgments	2
Region 1 - Kenai Lake	5
Region 2 - Moose Pass to Jerome Lake	23
Region 3 - Summit Lake	39
Region 4 - Silvertip to Turnagain Pass	59
Region 5 - Portage to Girdwood	85
Region 6 - Penguin Ridge	107
Region 8 - Indian to Anchorage	139
Region 9 - Sterling Highway	147
Region 10 - Hope Road	151
Region 11 - Portage Road	165
References cited	168

TABLE

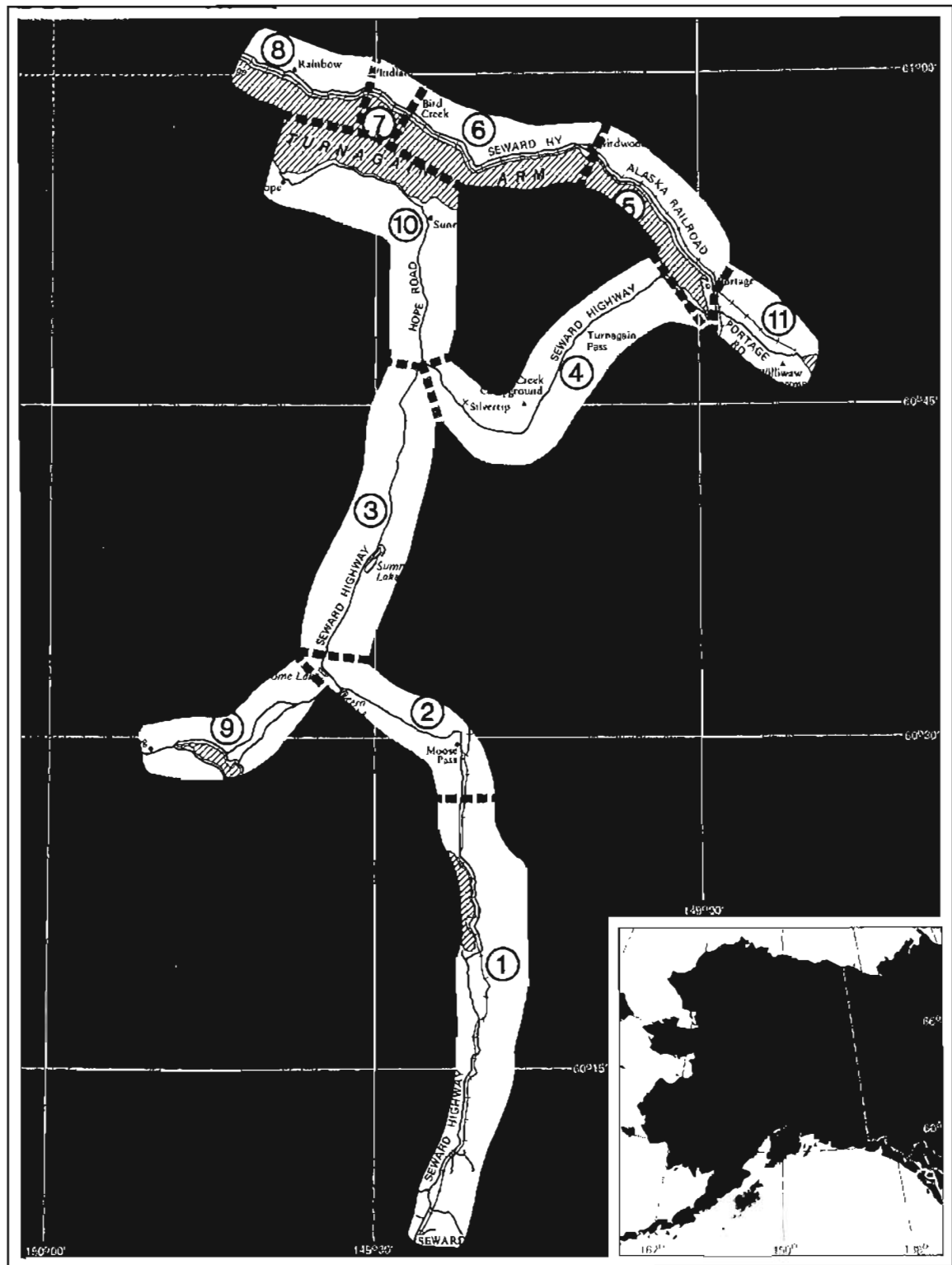
Table 1. List of avalanche paths	3
--	---

MAPS

Index map of avalanche regions, Seward Highway, south-central Alaska	iv
Avalanche paths 1.1-1 through 1.5-2, Kenai Lake	4
Avalanche paths 2.1, 2.2, Upper Trail Lake	22
Avalanche paths 2.3 through 2.6, Moose Pass to Jerome Lake	28
Avalanche paths 3.1 through 3.9, Summit Lake	38
Avalanche paths 4.1-1 through 4.3, Silvertip Creek	58
Avalanche paths 4.4 through 4.10, Granite Creek	70
Avalanche paths 5.1-1 through 5.4, Portage to Girdwood	84
Avalanche paths 6.1 through 6.8-5, Penguin Ridge	106
Avalanche paths 8.1 through 8.3, Indian to Anchorage	138
Avalanche path 9.1, Sterling Highway	146
Avalanche paths 10.1-1, 10.2, Hope Road	150
Avalanche paths 10.3 through 10.5, Hope Road	156
Avalanche path 11.1, Portage Road	164

PLATES

Plate 1. Avalanche paths of region 1, Seward Quadrangle	In pocket
2. Avalanche paths of regions 4-8, 10, and 11, Seward Quadrangle	In pocket
3. Avalanche paths of regions 2, 3, and 9, Seward Quadrangle	In pocket



Index map of avalanche regions, Seward Highway, south-central Alaska

SNOW AVALANCHE ATLAS, SEWARD HIGHWAY, ALASKA

By
G.D. March and L.G. Robertson¹

This atlas is intended as an operational guide to snow avalanche paths that affect the Seward Highway and its spur roads.

The atlas will be updated as new information becomes available; please forward any comments to the authors, c/o Alaska Division of Geological and Geophysical Surveys, P.O. Box 80007, College, AK 99708.

INTRODUCTION

The Seward Highway traverses the Kenai Peninsula from Seward on the south to Anchorage on the north. It is designated Alaska Route 9 from Seward to Tern Lake, a distance of 37 miles; from there it is a segment of Alaska Route 1.

Elevations of the terrain along the Seward Highway range from sea level to 6,000 ft (1,800 m). The highway winds through the Kenai Mountains to Turnagain Arm, where it traverses the base of the Chugach Mountains. The lower mountain slopes are covered with extensive coniferous (evergreen) and deciduous (leafy) vegetation, except in avalanche zones. The upper slopes are either tundra covered or bare rock.

PREVIOUS WORK

Atlases of avalanche paths have previously been compiled in Colorado by Miller and others (1976) and Armstrong and Armstrong (1977); in Washington by LaChapelle (1974); and in British Columbia by the Snow Avalanche Section, Maintenance Services, Ministry of Transportation and Highways. Earlier reports on the Seward Highway include State of Alaska (1963) and Alcan Avalanche Services (1979).

HOW THE DATA WERE COMPILED

Base maps of the Seward Highway area were compiled from U.S. Geological Survey topographic maps at a scale of 1:63,360. Avalanche paths were mapped on 1979 NASA AMES infrared air photos at a scale of 1:65,000 by examining stereopairs. Black-and-white USGS airphotos at a scale of 1:60,000 were also used to map the area between Portage and Bird Creek. Photos taken by the authors from light aircraft were valuable

in resolving questions. Extensive field checking and an examination of path histories completed the compilation. General methods of data compilation followed those of Mears (1976).

CLIMATE

Major storm systems originating in the Gulf of Alaska produce a precipitation gradient across the Kenai Peninsula. Rates of snowfall increase from west to east and from low to high elevations. Wet snow and rain are common at low elevations throughout the winter, but temperatures decrease with altitude.

AVALANCHES

The Seward Highway is affected by about 60 known avalanche paths. Five additional paths impact the Hope Road. One avalanche path reaches the Sterling Highway and one the Portage Road.

AVALANCHE CONTROL

In the early 1960's, earth mounds were constructed at the base of a few avalanche paths along Turnagain Arm in an attempt to stop moving snow before it reached the highway. Avalanching in the areas of Turnagain Arm, mile 37-38 (the Y), and Kenai Lake have been controlled by recoilless rifle since 1969 (Alcan Avalanche Services, 1979).

DEFINITIONS OF TERMS USED IN AVALANCHE-PATH SUMMARIES

The following terms are used in describing avalanche paths throughout the atlas.

NUMBER: The Seward Highway corridor and spur roads have been divided into regions based on geography. The regions are subdivided into zones based on similarity of characteristics of adjacent avalanche slopes, and these zones are further divided into individual paths where information is available. All avalanche slopes visible from the road have been given an identification number. The avalanche-path summaries address snow slides that affect the road; their identification numbers include region, zone, and sometimes path, for example

¹DGGS, College, Alaska 99708.

3.2-1. Because numbers have been used to identify all avalanche slopes visible from the highway, each number on the maps does not have a corresponding path description (table 1).

MAP: Standard USGS topographic maps were used as a base; their contour interval is 100 ft.

AERIAL PHOTOGRAPHS: Aerial photographs were produced by both NASA AMES and the USGS. The former photos, taken in August 1978, are false-color infrared (CIR). Mission and frame numbers are denoted by M and F; the scale is 1:65,000.

The black-and-white USGS photos, taken in 1957, have the mission, role, and frame numbers denoted as BMO, R, and F, respectively. The scale is 1:60,000.

Oblique photos used in this report were taken from light aircraft by Jim Hackett of the U.S. Forest Service, the Alaska Department of Transportation and Public Facilities, and the authors.

ELEVATION: Taken from USGS topographic maps at a scale of 1:63,360. The starting zone elevations give the probable range in which an avalanche will start; the runout zone elevations give the probable range in which an avalanche will stop.

VERTICAL FALL: The vertical distance from the highest to the lowest elevation of an avalanche path.

STARTING ZONE ASPECT: The direction in which the avalanche starting zone faces. Aspects were measured with a compass from USGS 1:63,360-scale topographic maps and are expressed as compass directions.

INCLINE: The slope angle of the starting zone, track, and runout zone of the avalanche path. Slope angles in degrees were calculated from published 1:63,360-scale maps.

STARTING ZONE: The area where unstable snow usually breaks away from the slope and begins to move downhill. Occasionally, changes in the elevation of the freezing line caused by above-freezing temperatures or rain, can cause avalanches to start at a lower elevation.

TRACK: That area between the starting zone and the runout zone where the avalanche reaches its maximum velocity.

RUNOUT ZONE: The area at the bottom of the avalanche path where the moving snow and entrained debris decelerate and stop.

Terrain and vegetation are described for the starting zone, track, and runout zone. Descriptions are based on field observations.

HISTORY: In the early 1900's Bird Hill trail was the route between Anchorage and Girdwood. In 1951 the Seward Highway was completed, joining Seward with Anchorage. The highway between Potter and Girdwood was built on the abandoned bed of the Alaska Railroad, which was moved closer to Turnagain Arm.

Avalanche path histories were compiled by Douglas Fesler, Alaska Division of Parks.

NOTES: Primarily data from fallen trees in the runout zones of avalanche paths. Ages of these trees can be used for a rough determination of the frequency of avalanching (Potter, 1969; Burrows and Burrows, 1976; Mears, 1976). Ages of downed trees were determined by counting annual rings at a height of 4.5 ft above the base; 10 years was added to each as an estimate of the time required for the tree to grow to 4.5 ft. Because of the scarcity of data, avalanche frequencies were not calculated.

ACKNOWLEDGMENTS

The authors thank Doug Fesler, Alaska Division of Parks, for supplying histories of avalanche paths and for many helpful suggestions and continued support. Jim Hackett, USDA Forest Service, made helpful suggestions and supplied many photographs. Devril Peterson, Alaska Department of Transportation and Public Facilities, reviewed and corrected mileages on the maps. Les Viereck, Institute of Northern Forestry, assisted with the tree-ring dating. Larry Mayo, USGS Water Resources Division, and Jerome B. Johnson, University of Alaska Geophysical Institute, reviewed the manuscript and offered helpful suggestions. Illustrations were prepared by Karen Pearson, DGGs cartographer.

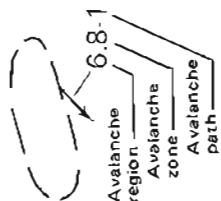
Table 1. *List of avalanche paths*

Number (region, zone, path)	Mile	Name	Number (region, zone, path)	Mile	Name
1.1-1	18	Kenai Lake	5.2-2	85	
1.1-2	18.2		5.2-3	85.4	
1.1-3	18.5	Primrose	5.3-1	86.7	Kern No. 4
1.2	21		5.3-2	86.8	Kern No. 3
1.3	21		5.3-3	87.1	Kern No. 2
1.4	21.3		5.3-4	87.3	Kern No. 1
1.5-1	21.8		5.4	88	
1.5-2	22.6				
2.1	29	Moose Pass	6.1	91-92	
2.2	31.4	Laughing Outhouse	6.2-1	92.2	
2.3	34	Bus Stop	6.2-2	92.5	
2.5-1	35	Avalanche Acres	6.3	92.8 - 93.4	
2.5	35 - 37.5	The Y	6.4-1	93.7	Whiskey Gulch
2.6	38	Jerome Lake	6.4	93.8 - 94.1	Superscooper
			6.5	94.5	Superman's Climax
			6.6-1	94.8	Cottonwood
3.3	43		6.6-2	95	
3.4	44.5	Summit Lake West	6.6-3	95.2	
3.5	44.5	Summit Lake East	6.8-1	97.6	Bird Flat No. 5
3.6-1	46.5	Lower Summit Lake West	6.8-2	97.7	Bird Flat No. 4
3.6-2	46.8	Lower Summit Lake East	6.8-3	98	Bird Flat No. 3
3.7	46 - 47		6.8-4	98.2	Bird Flat No. 2, Five Fingers
3.8-1	48.5		6.8-5	98.9	Bird Flat No. 1
3.8-2	49		8.1	105	Grotto
3.8-3	49.5		8.2	106	Falls Creek
			8.3	107.5	Straight Shot
4.1-1	59				
4.1-2	59.5				
4.1-3	59.6				
4.1-4	60.5	Silvertip Creek	9.1	38	Laurie's Lament
4.3	62.4				
4.4	63.8	Granite Creek			
4.5-1	64.9	Spokane Creek			
4.5-2	65		10.1-1	18.5	
4.6	65.4	Bertha Creek Campground	10.2	17	Boston Bar
4.7-1	66.3		10.3	11	Sunrise Creek
4.7-2	66.4, 66.6		10.4	8.8	
			10.5	7	
5.1-1	83.4	Peterson No. 2			
5.1-2	83.7	Peterson No. 1			
5.2-1	84.9				
			11.1	4	Williwaw Campground



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

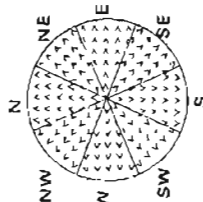
Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.



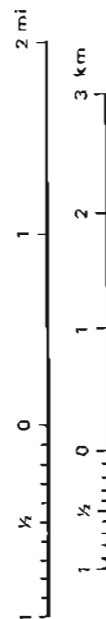
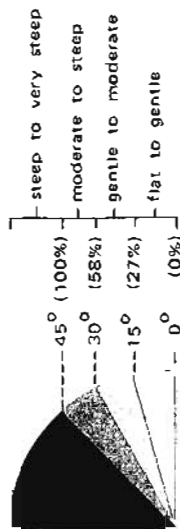
Road mileage

38

SLOPE ASPECT



SLOPE ANGLE (GRADIENT) — DESCRIPTION

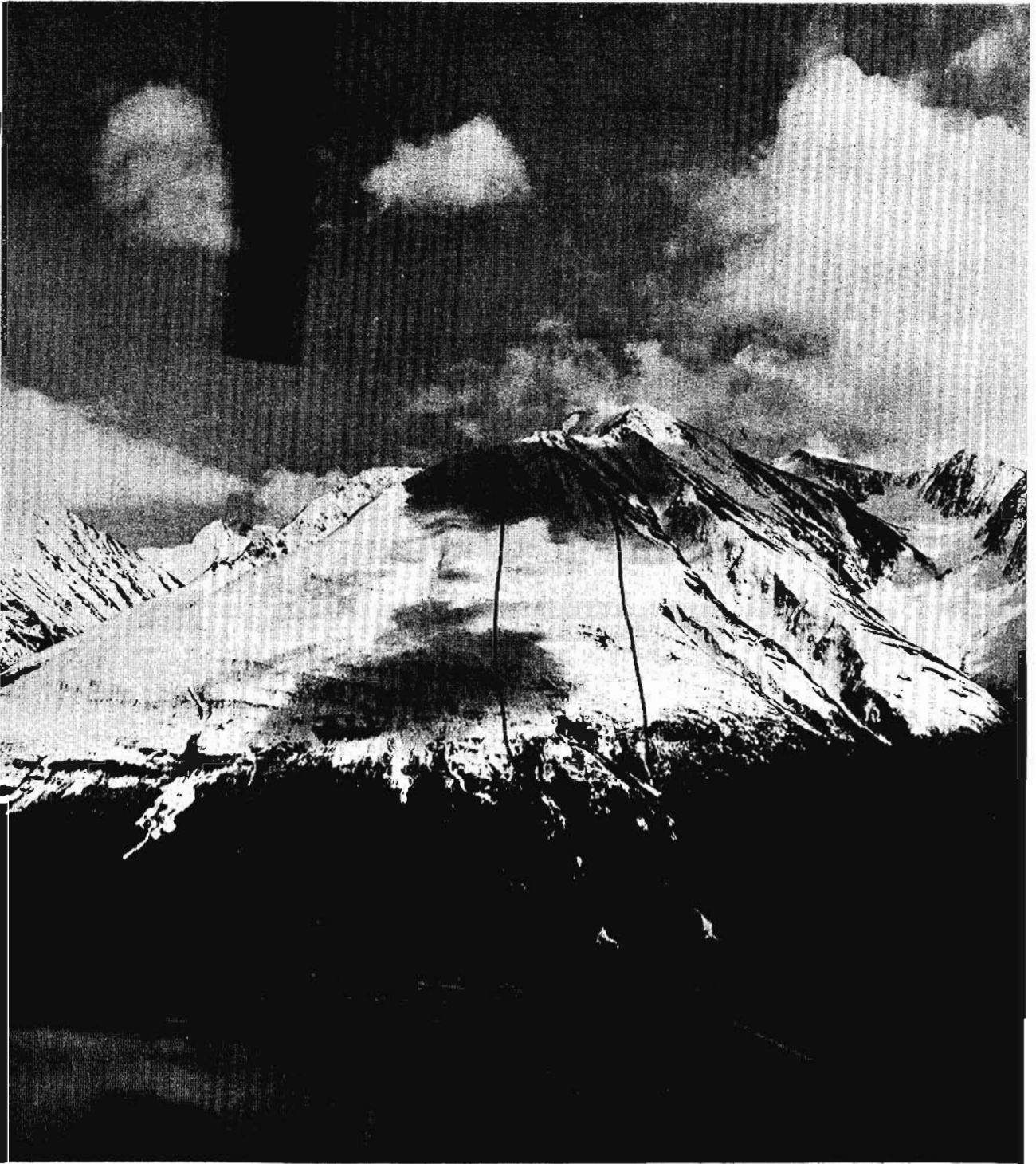


REGION 1

KENAI LAKE
Mile 1 - 25

*Avalanche paths 1.1-1
through 1.5-2, Kenai
Lake*

1.1-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.1-1

MILE: 18

NAME: Kenai Lake

LOCATION: East side of bridge over Snow River

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6887, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,200-3,000 ft (1,280-910 m)

Runout zone: 400 ft (120 m)

VERTICAL FALL: 3,800 ft (1,160 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 21° Track: 29°

Runout zone: Level

STARTING ZONE: Shallow bowl

TRACK: Begins as wide-open slope cut by terraces that are covered with immature deciduous vegetation; lower track bordered by mature spruce; shallow gully in middle of track

RUNOUT ZONE: Railroad track and Snow River flood plain

HISTORY: May 1977: Avalanche-mudslide took out Seward Highway
May 8, 1960: Highway blocked

NOTES:

1.1-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.1-2

MILE: 18.2

NAME:

LOCATION: 0.2 mi (0.3 km) north of Snow River bridge

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6887, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,400-2,700 ft (1,040-820 m)

Runout zone: 400 ft (120 m)

VERTICAL FALL: 3,000 ft (915 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 36°

Track: 30°

Runout zone: Level

STARTING ZONE: Terraced open slope ending in rock cliff

TRACK: Begins as wide, open slope; upper section covered with low vegetation; terraced midsection covered with immature deciduous vegetation; lower section covered with mature aspen bordered by mature spruce; track ends in cliff above highway

RUNOUT ZONE: Railroad and highway

HISTORY:

NOTES:

1.1-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.1-3

MILE: 18.5

NAME: Primrose

LOCATION: 0.6 mi (0.9 km) north of Snow River bridge

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6887, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,500-1,800 ft (760-550 m)

Runout zone: 400 ft (120 m)

VERTICAL FALL: 2,100 ft (640 m)

STARTING-ZONE ASPECT: West, southwest

INCLINE: Starting zone: 36°

Track: 21°

Runout zone: Level

STARTING ZONE: Gully in open slope

TRACK: Begins as shallow gully in open slope; upper track covered with immature deciduous vegetation; lower track wide slope covered with mature aspen and bordered by mature spruce; track ends in cliff above highway

RUNOUT ZONE: Railroad, highway, and Kenai Lake

HISTORY: Feb. 16, 1946: Railroad blocked

NOTES: Powerline crosses lower track

1.2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.2

MILE: 21

NAME:

LOCATION: About 3 mi (4.8 km) north of Snow River bridge

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6697, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,300-3,000 ft (1,310-910 m)

Runout zone: 800-400 ft (240-120 m)

VERTICAL FALL: 3,900 ft (1,190 m)

STARTING-ZONE ASPECT: West

INCLINE: Starting zone: 35°

Track: 31°

Runout zone: 11°

STARTING ZONE: Triangular face covered by low-lying vegetation

TRACK: Prominent gully bordered by low vegetation in upper one-third of track; bottom two-thirds of track
deep gully bordered by deciduous trees

RUNOUT ZONE: Gentle slope, highway, railroad, and Kenai Lake

HISTORY: Winter 1980: Ran into lake and took out guardrail west of highway

Apr. 22, 1959: Highway blocked

NOTES: House and garden on north side of runout zone

1.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.3

MILE: 21

NAME:

LOCATION: 3.1 ml (4.9 km) north of Snow River bridge at Rocky Creek

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6697, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,300-2,400 ft (1,310-730 m)

Runout zone: 700-400 ft (210-120 m)

VERTICAL FALL: 3,900 ft (1,190 m)

STARTING-ZONE ASPECT: Southwest, west, northwest

INCLINE: Starting zone: 22°

Track: 22°

Runout zone: 11°

STARTING ZONE: Very large, deep bowl

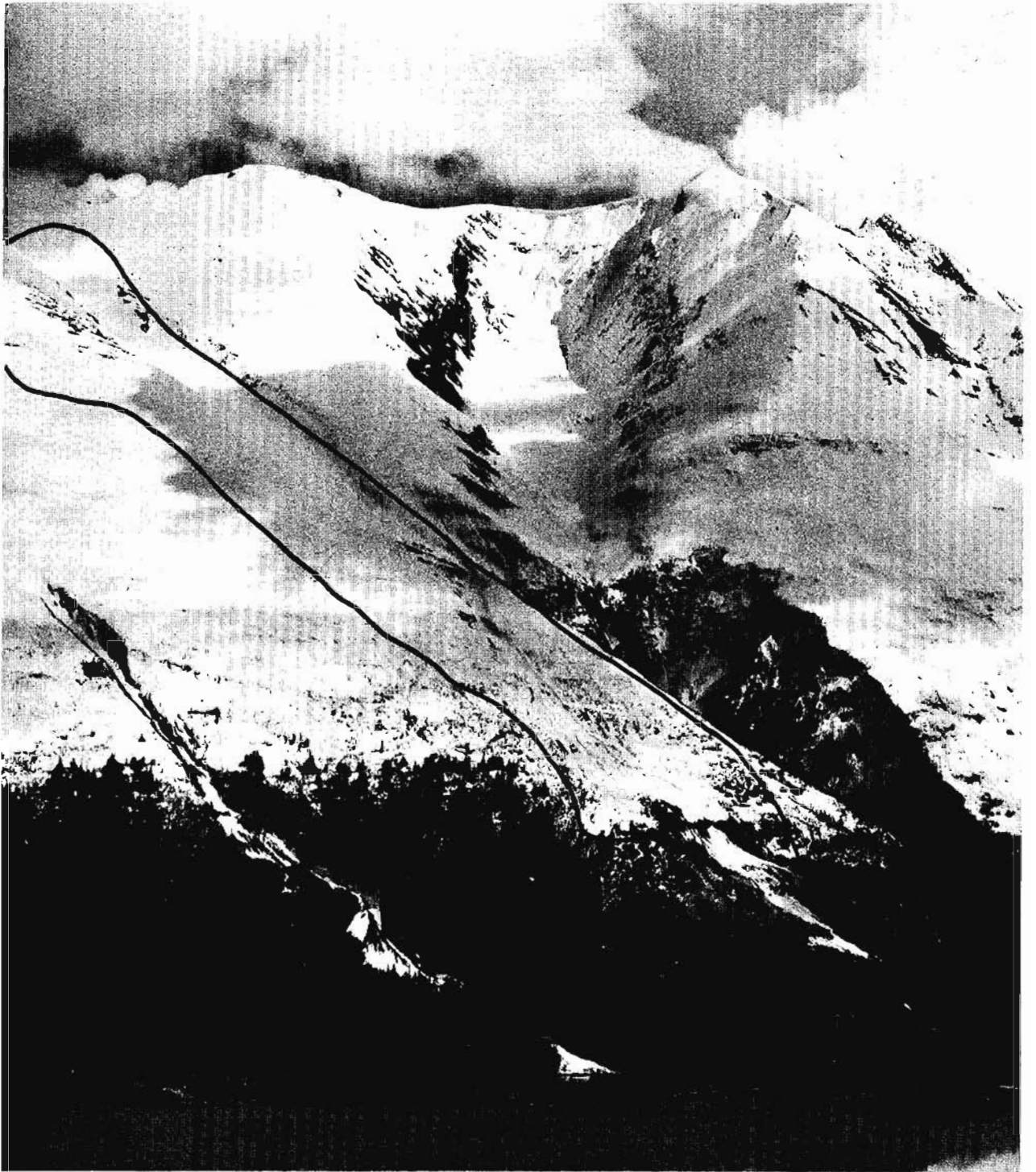
TRACK: Begins as valley bottom fed by steep-sided slopes; lower track is steep, incised gully

RUNOUT ZONE: Gentle slope bordered by mature deciduous vegetation; joins runout of avalanche path 1.2
above highway

HISTORY:

NOTES:

1.4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.4

MILE: 21.3

NAME:

LOCATION: 3.3 mi (5.2 km) north of Snow River bridge

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6697, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,300-2,400 ft (1,310-730 m)

Runout zone: 600-400 ft (180-120 m)

VERTICAL FALL: 3,900 ft (1,190 m)

STARTING-ZONE ASPECT: Southwest, west

INCLINE: Starting zone: 27°

Track: 26°

Runout zone: 11°

STARTING ZONE: Open slope terminating in gully

TRACK: Sinuous creek gully

RUNOUT ZONE: Open slope bordered by mature vegetation; runout passes over rock cliff and divides into segments separated by mature deciduous stand; both segments hit highway, railroad, and Kenai Lake

HISTORY: Winter 1980: Ran to lake, denuding runout zone

NOTES: 1980: Spruce (cored): 100 yr
Alder (cut): 48 yr

1.5-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.5-1

MILE: 21.8

NAME:

LOCATION: 3.8 mi (6 km) north of Snow River bridge

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6697, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,300-2,400 ft (1,310-730 m)

Runout zone: 600-400 ft (180-120 m)

VERTICAL FALL: 3,900 ft (1,190 m)

STARTING-ZONE ASPECT: Southwest, west

INCLINE: Starting zone: 33°

Track: 23°

Runout zone: 28°

STARTING ZONE: Broad, open slope

TRACK: Steep-sided creek gully

RUNOUT ZONE: Alluvial fan above highway, highway, railroad, Kenai Lake

HISTORY:

NOTES: Numerous trees down on west side in gully

1980: Spruce (cut): 194 yr

Spruce (cored): 170 yr

Aspen (cut): 35 yr

1.5-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 1.5-2

MILE: 22.6

NAME:

LOCATION: 0.5 mi (0.8 km) south of Ptarmigan Creek bridge and U.S. Forest Service Campground

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6697, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,100-2,300 ft (945-700 m)

Runout zone: 600-400 ft (180-120 m)

VERTICAL FALL: 2,700 ft (820 m)

STARTING-ZONE ASPECT: West

INCLINE: Starting zone: 27°

Track: 22°

Runout zone: 21°

STARTING ZONE: Broad, open slope cut by rock cliffs

TRACK: Gully fed by tributaries in open slope covered by immature deciduous vegetation

RUNOUT ZONE: Highway, railroad, and Kenai Lake

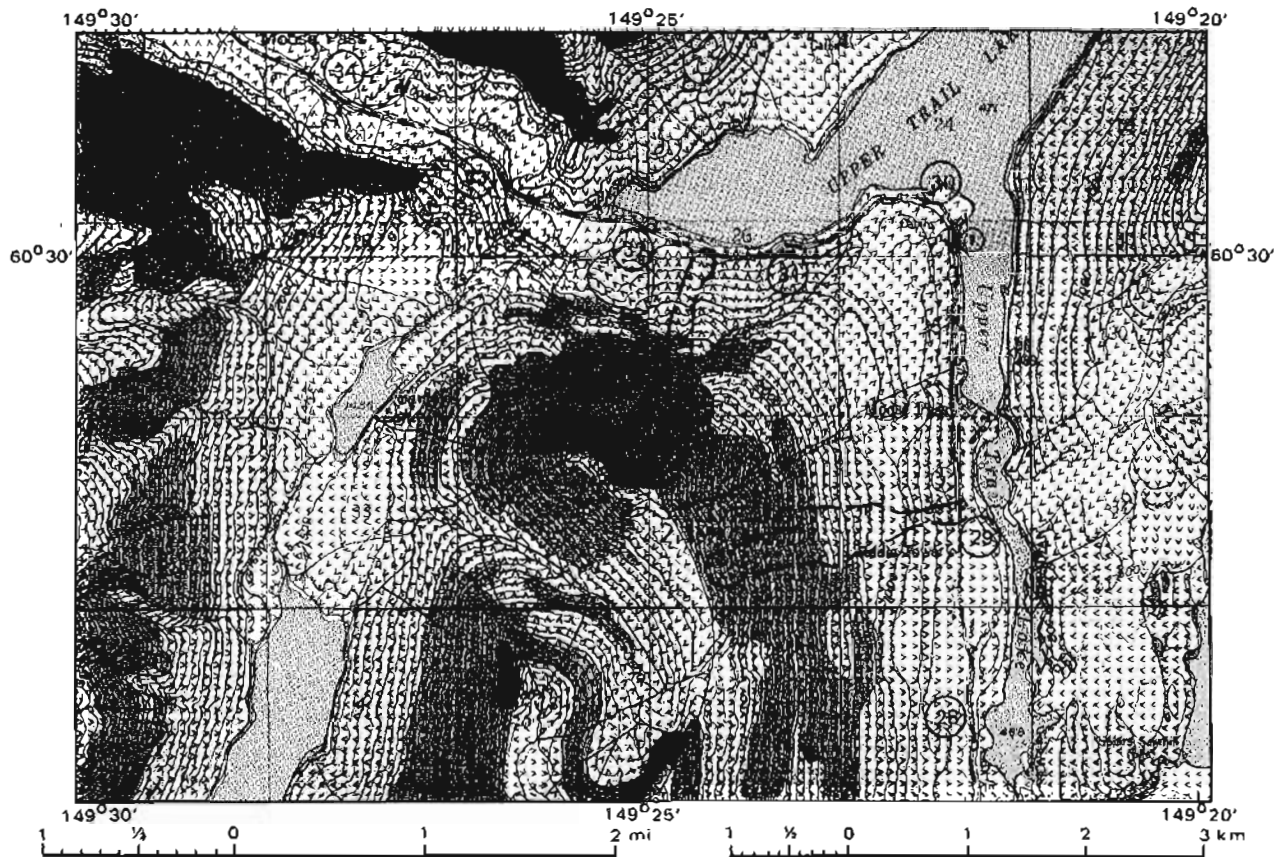
HISTORY:

NOTES: Culvert under road

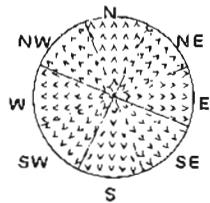
1980: Spruce (cut): 100 yr

Spruce (cut): 71 yr

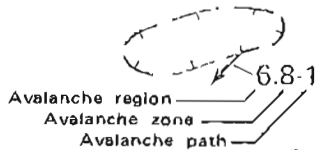
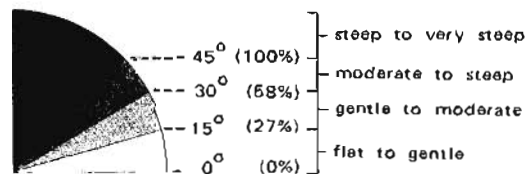
Spruce (cored): about 100 yr



SLOPE ASPECT



SLOPE ANGLE (GRADIENT) - DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

(38) Road mileage

REGION 2

MOOSE PASS TO JEROME LAKE

Mile 26 - 32

*Avalanche paths 2.1, 2.2,
Upper Trail Lake*

2.1

NO PHOTO AVAILABLE

SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2.1

MILE: 29

NAME: Moose Pass

LOCATION: 0.4 mi (0.6 km) south of Moose Pass

MAP: Seward B-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,300 ft (1,220-700 m)

Runout zone: 700-500 ft (210-150 m)

VERTICAL FALL: 2,900 ft (885 m)

STARTING-ZONE ASPECT: East

INCLINE: Starting zone: 33° Track: 25° Runout zone: 11°

STARTING ZONE: Narrow bowl

TRACK: Shallow gully in open slope; lower portion of track bordered by mature spruce

RUNOUT ZONE: Base of slope; runout zone includes some recently constructed houses and the highway

HISTORY:

NOTES:

2.2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2.2

MILE: 31.4

NAME: Laughing Outhouse

LOCATION: South side of road across from state wayside on Upper Trail Lake

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,600-2,500 ft (1,400-760 m)

Runout zone: 900-500 ft (270-150 m)

VERTICAL FALL: 4,100 ft (1,250 m)

STARTING-ZONE ASPECT: Northeast, north

INCLINE: Starting zone: 39°

Track: 31°

Runout zone: 14°

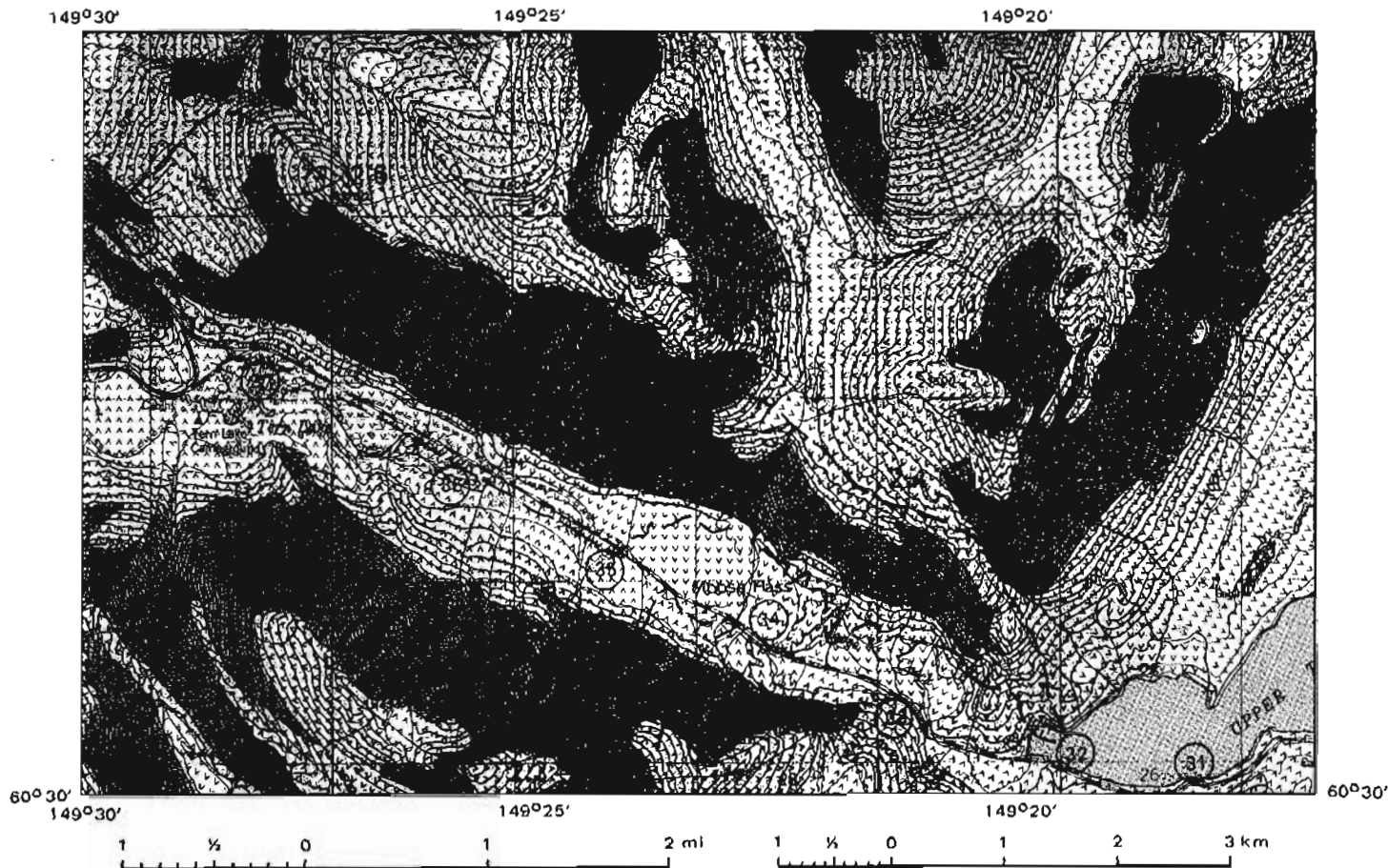
STARTING ZONE: Consists of two parts: south starting zone has four small gullies above rock cliff that feed into large gully; north starting zone is deep, narrow gully below rock cliffs

TRACK: Two parallel gullies

RUNOUT ZONE: Balsam poplar stand above road, with downed trees

HISTORY:

NOTES: Hit privy in rest area a few years ago



ERRATA: p. 28 -

Delete 149°30'. Change 149°25' to 149°30' and 149°20' to 149°25'.

REGION 2

MOOSE PASS TO JEROME LAKE

Mile 33 - 39

*Avalanche paths 2.3
through 2.6, Moose
Pass to Jerome Lake*

2.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2.3

MILE: 34

NAME: Bus Stop

LOCATION: 3 mi (4.8 km) southeast of Sterling Highway junction, on south side of highway

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, 6909, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,200-3,100 ft (1,280-950 m)

Runout zone: 800-700 ft (240-210 m)

VERTICAL FALL: 3,500 ft (1,070 m)

STARTING-ZONE ASPECT: Northeast

INCLINE: Starting zone: 35° Track: 34° Runout zone: 7°

STARTING ZONE: Two adjacent broad, shallow gullies

TRACK: Two deep gullies separated by wide, open slope; slope covered with immature deciduous vegetation

RUNOUT ZONE: Begins at base of slope and climbs over rise on south end; small part crosses highway;
downed trees in runout zone

HISTORY: Winter 1980: Trees destroyed

NOTES: 1980: Spruce (cut): 81, 85 yr

Aspen (cut): 66 yr

2.5-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2,5-1

MILE: 35

NAME: Avalanche Acres

LOCATION: 2 mi (3.2 km) southeast of southerly Sterling Highway junction

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,400 ft (1,220-730 m)

Runout zone: 1,000-700 ft (300-210 m)

VERTICAL FALL: 3,400 ft (1,040 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 31° Track: 34° Runout zone: 12°

STARTING ZONE: Numerous gullies and rock cliffs

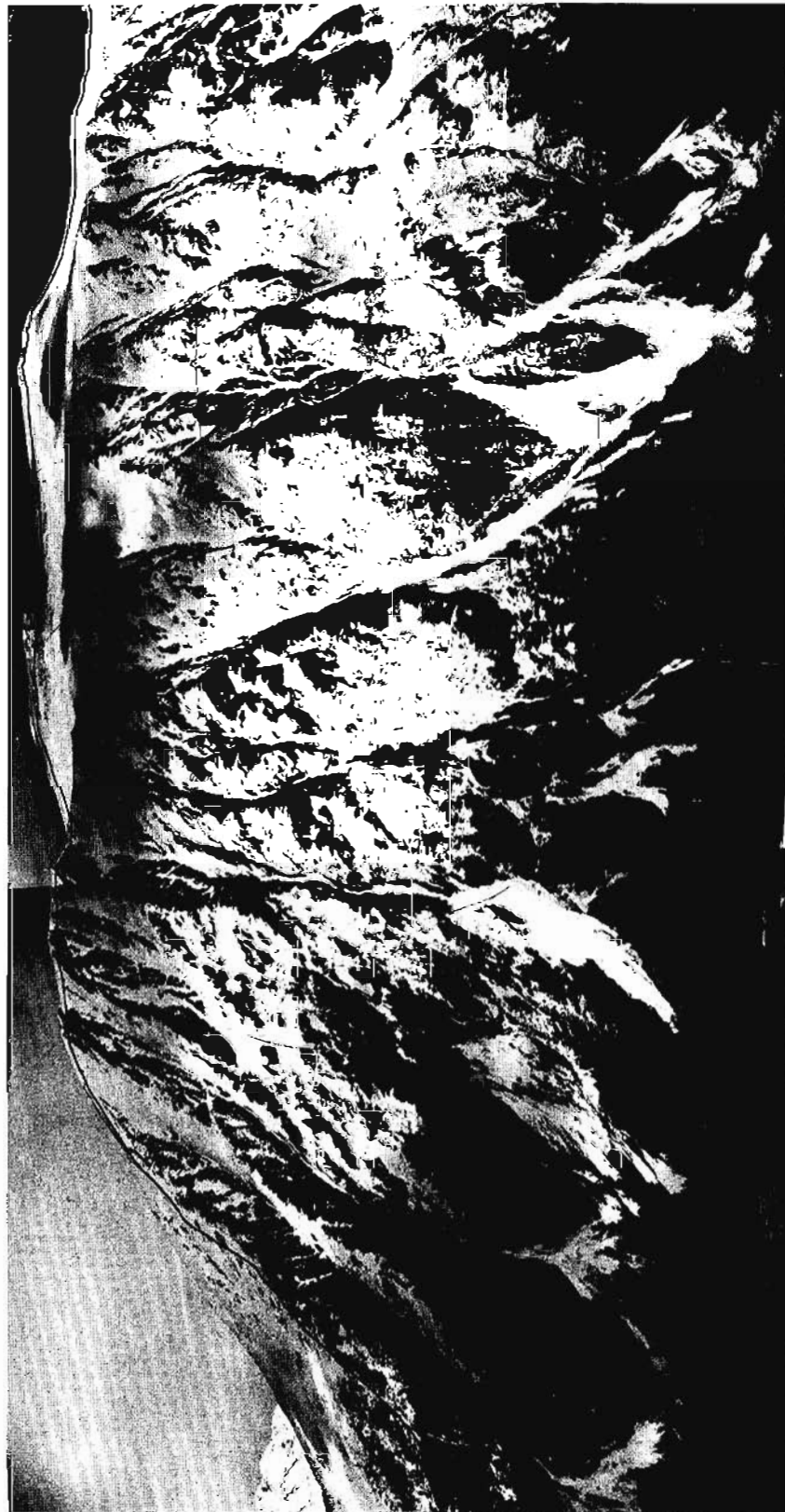
TRACK: Open slope cut by numerous gullies; slope covered with low vegetation

RUNOUT ZONE: Covered by immature deciduous and scattered mature coniferous vegetation; several subdivision lots in runout zone

HISTORY:

NOTES:

2.5



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2.5

MILE: 35 - 37.5

NAME: The Y

LOCATION: On east side of road starting at northerly junction of Sterling Highway and extending southeast for next 2.5 mi (4 km)

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,900-2,100 ft (1,490-640 m)

Runout zone: 1,000-650 ft (300-200 m)

VERTICAL FALL: 4,350 ft (1,330 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 41° Track: 40° Runout zone: 18°

STARTING ZONE: Numerous gullies and rock cliffs extending across 3-mile face below open slope

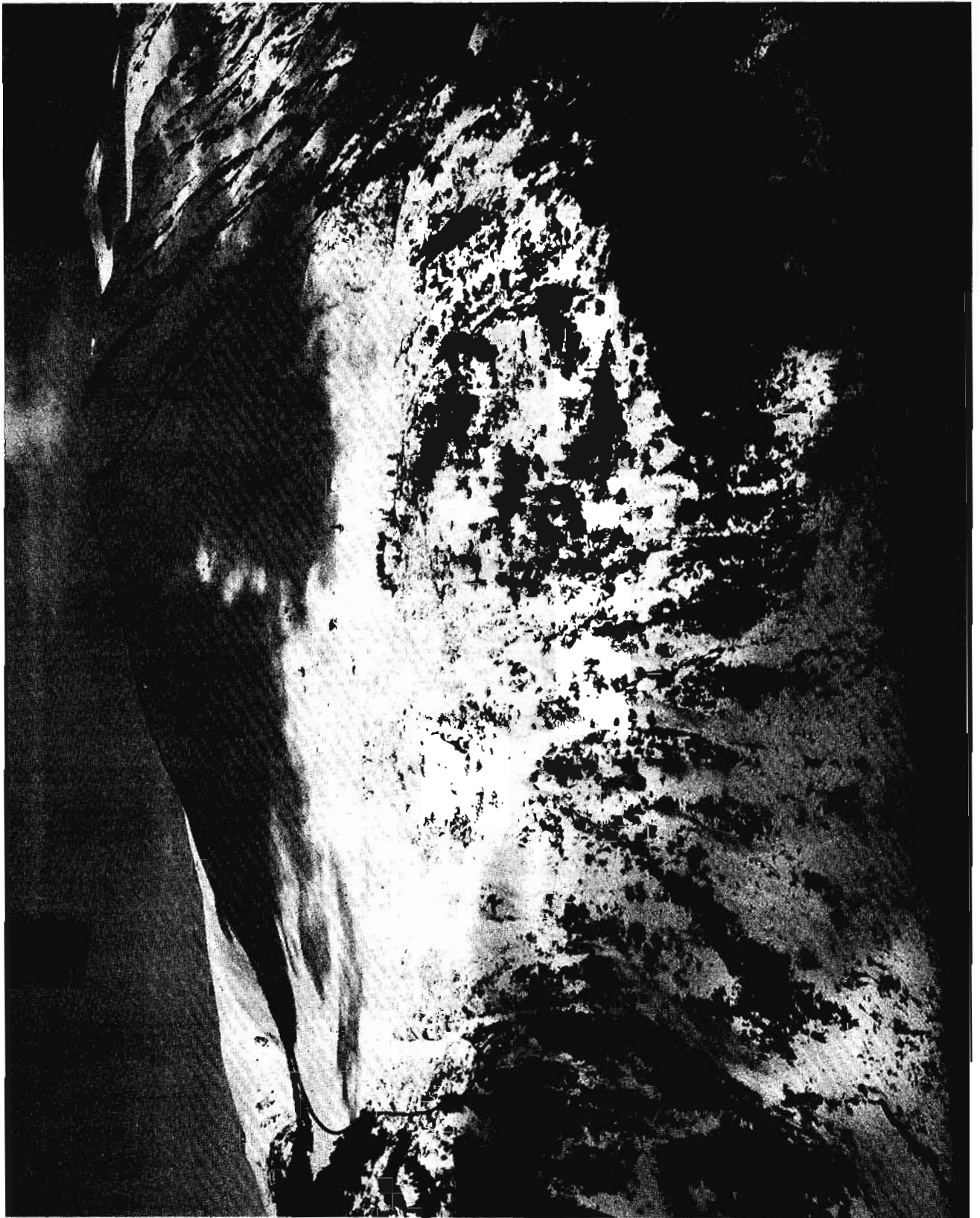
TRACK: Numerous gullies and rock cliffs above open slope; vegetation ranges from sparse low shrubs to mature coniferous and deciduous trees

RUNOUT ZONE: Several zones separated by mature tree stands; runout zones begin at base of slope and intersect highway in many places

HISTORY:

NOTES: Many downed trees at base of runout zone

2.6



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 2.6

MILE: 38

NAME: Jerome Lake

LOCATION: East side of highway just south of Jerome Lake, 0.3 mi (0.5 km) north of northerly Sterling Highway junction

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6680, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,750-2,300 ft (1,140-700 m)

Runout zone: 1,200-800 ft (370-240 m)

VERTICAL FALL: 2,950 ft (900 m)

STARTING-ZONE ASPECT: North, northwest

INCLINE: Starting zone: 42°

Track: 23°

Runout zone: 16°

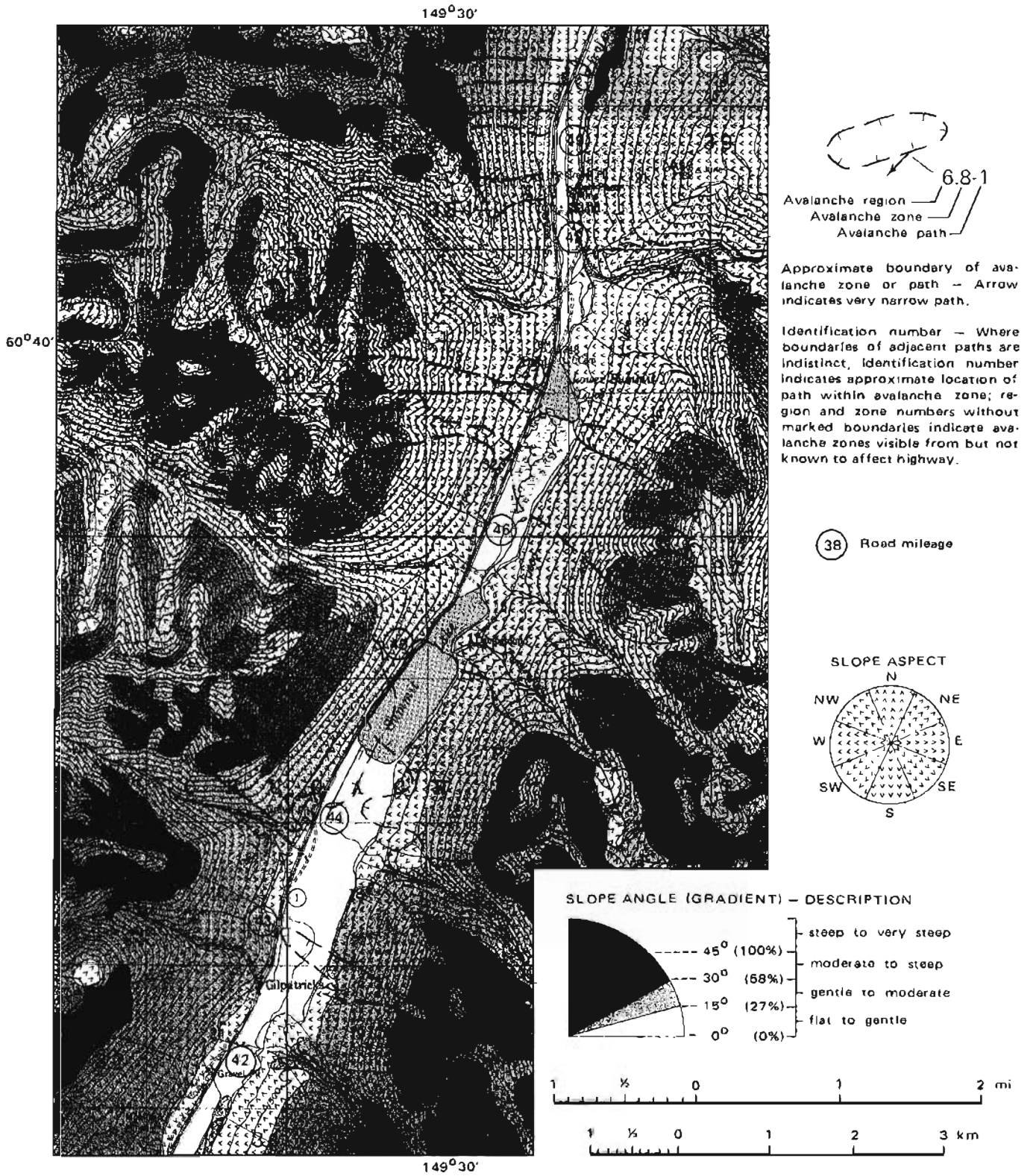
STARTING ZONE: Broad, open slope covered with low-lying vegetation

TRACK: Begins as open slope with low vegetation; lower track has scattered deciduous trees

RUNOUT ZONE: Gentle, open slope with scattered deciduous vegetation; runout zone crosses highway and extends uphill on opposite side; many downed trees in runout, mainly on hill on west side of highway

HISTORY: Apr. 1935: Highway blocked
Jan. 11, 1940: Highway blocked
Winter 1980: Highway blocked

NOTES: 1981: Cottonwood (cut): 43, 78, 93 yr
Spruce (cut): 67, 149 yr



REGION 3

SUMMIT LAKE

Mile 40 - 56

*Avalanche paths 3.1
through 3.9, Summit
Lake*

3.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.3

MILE: 43

NAME:

LOCATION: On east side of road about 2 mi (3.2 km) south of Summit Lake Lodge

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6681, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,100-2,300 ft (1,250-700 m)

Runout zone: 1,500-1,300 ft (460-400 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: West

INCLINE: Starting zone: 40°

Track: 17°

Runout zone: 4°

STARTING ZONE: Steep bowl

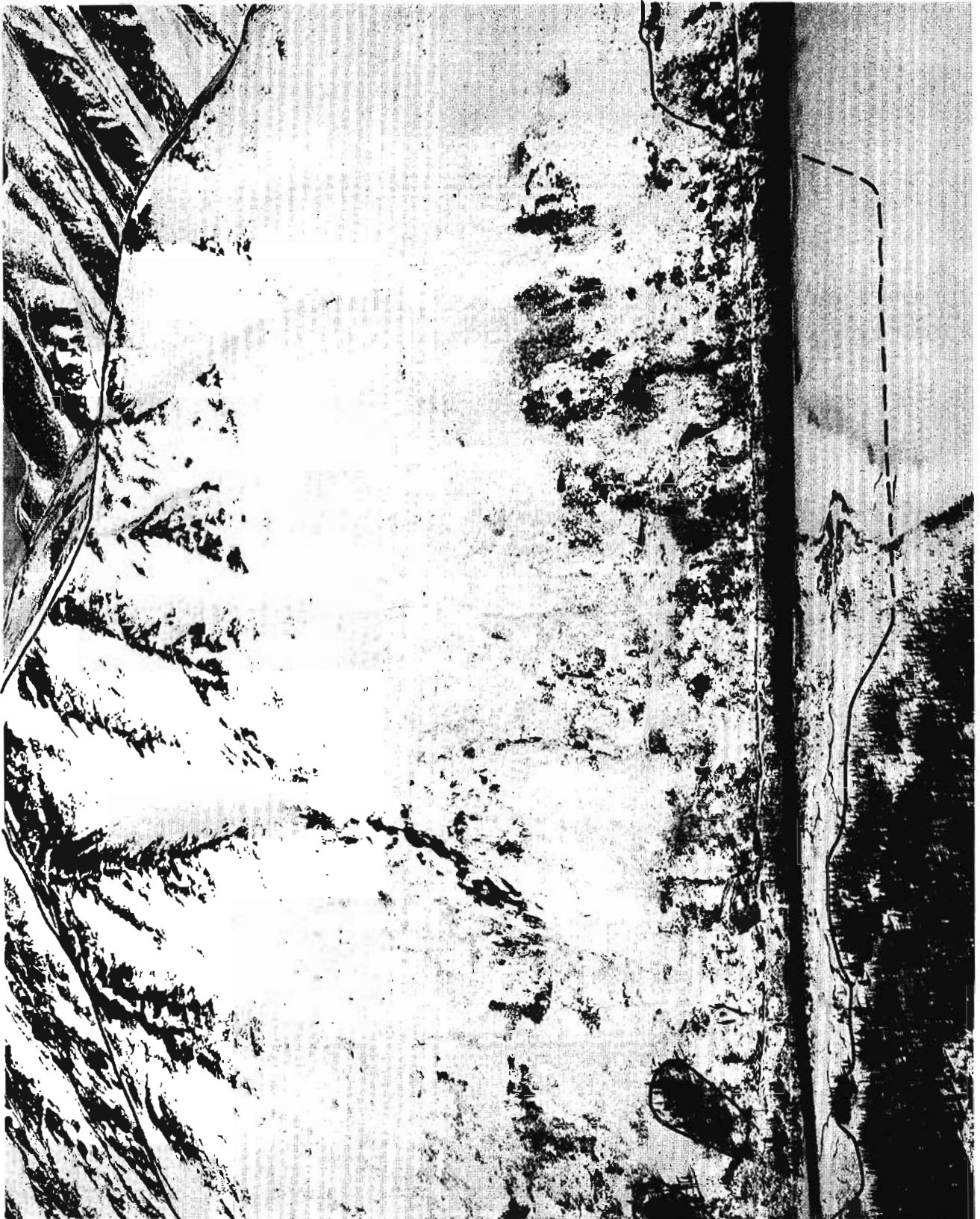
TRACK: Deep gully

RUNOUT ZONE: Gentle, open slope with immature coniferous and deciduous trees; also includes swamp and highway

HISTORY:

NOTES:

3.4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.4

MILE: 44.5

NAME: Summit Lake West

LOCATION: 1 mi (1.6 km) south of Summit Lake Lodge on west side of highway

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-2,600 ft (1,160-790 m)

Runout zone: 1,500-1,300 ft (460-400 m)

VERTICAL FALL: 2,400 ft (730 m)

STARTING-ZONE ASPECT: South, southeast

INCLINE: Starting zone: 30°

Track: 19°

Runout zone: 9°

STARTING ZONE: Series of broad, shallow gullies covered with sparse vegetation; gullies separated by low un-vegetated ridges

TRACK: Broad, open slope; bottom of track has some mature deciduous growth

RUNOUT ZONE: Highway and Summit Lake; downed trees in runout zone

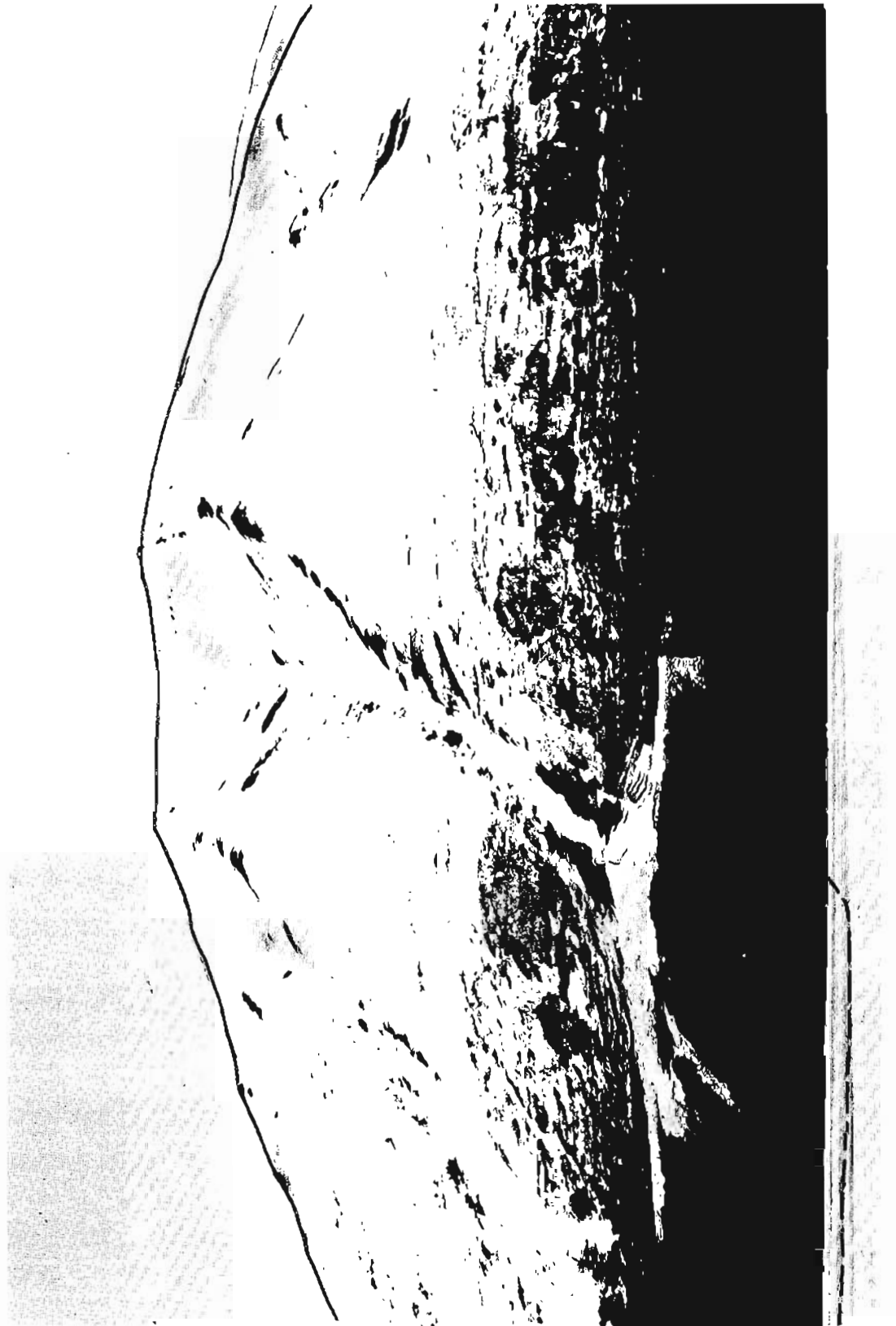
HISTORY: Feb. 20, 1962: Highway blocked at south end of path

Dec. 25, 1959: Highway blocked

Feb. 16, 1959: Highway blocked by two slides

NOTES: 1980: Cottonwood (cored): 90 yr

3.5



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.5

MILE: 44.5

NAME: Summit Lake East

LOCATION: 1 mi (1.6 km) south of Summit Lake Lodge on east side of road

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,500 ft (1,220-760 m)

Runout zone: 1,600-1,300 ft (490-400 m)

VERTICAL FALL: 3,100 ft (950 m)

STARTING-ZONE ASPECT: West, northwest, north

INCLINE: Starting zone: 32°

Track: 21°

Runout zone: 5°

STARTING ZONE: Wide, shallow gully

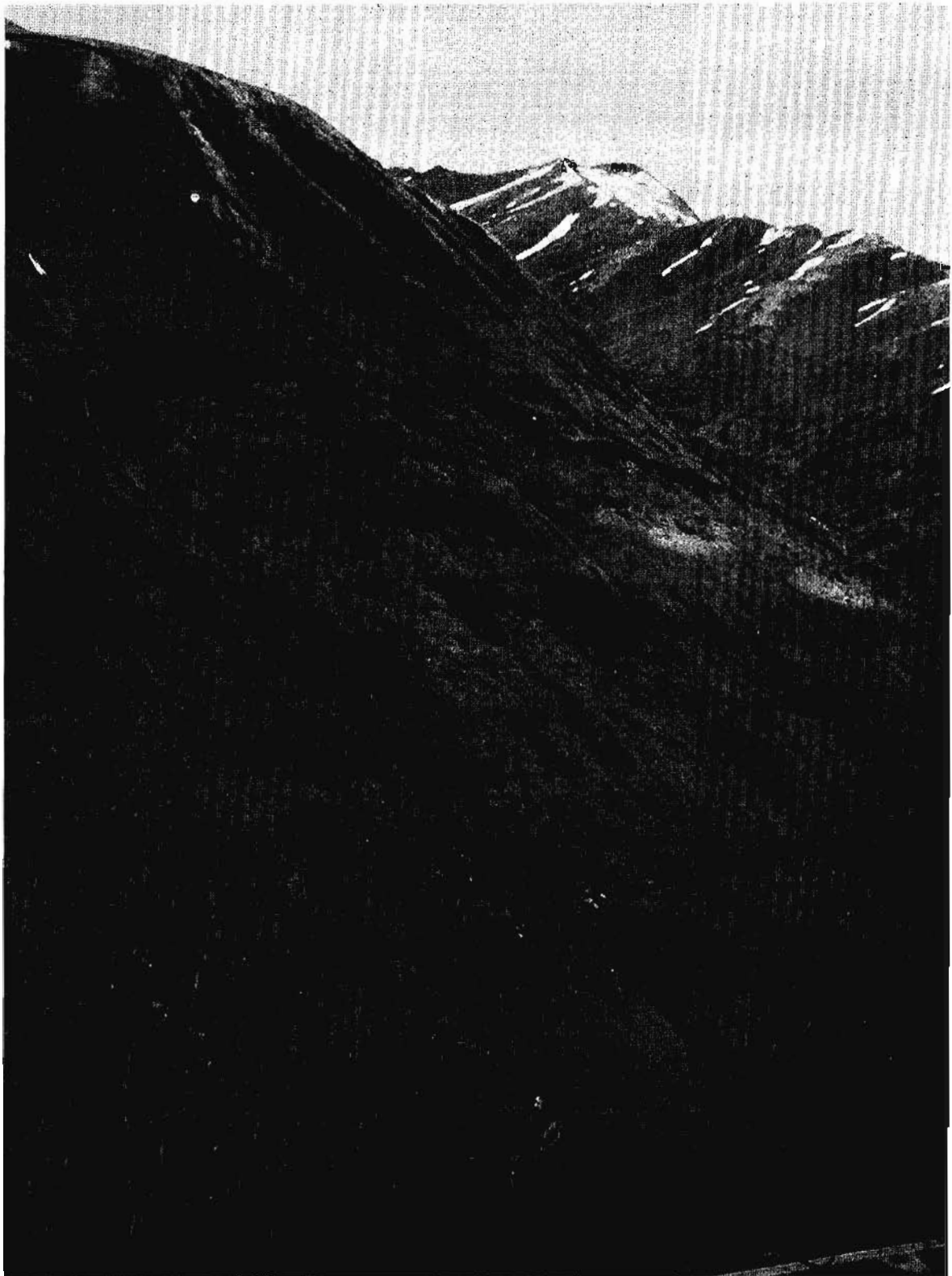
TRACK: Open slope cut by shallow gully; slope covered by low, immature deciduous vegetation

RUNOUT ZONE: Summit Lake and occasionally the highway

HISTORY:

NOTES:

3.6-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.6-1

MILE: 46.5

NAME: Lower Summit Lake West

LOCATION: On west side of road about 0.5 mi (0.8 km) south of Lower Summit Lake

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,500 ft (1,220-760 m)

Runout zone: 1,500-1,300 ft (460-400 m)

VERTICAL FALL: 2,700 ft (820 m)

STARTING-ZONE ASPECT: East

INCLINE: Starting zone: 30°

Track: 17°

Runout zone: 11°

STARTING ZONE: Two broad, shallow bowls separated by unvegetated parallel ridges

TRACK: Broad, open slope cut by shallow gully; track covered with low vegetation and scattered immature deciduous stands

RUNOUT ZONE: Bordered by mature spruce; extends to the highway

HISTORY:

NOTES:

3.6-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.6-2

MILE: 46.8

NAME: Lower Summit Lake East

LOCATION: West side of road, 0.2 mi (0.3 km) south of Lower Summit Lake

MAP: Seward C-1 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6926, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,700-2,500 ft (1,130-760 m)

Runout zone: 1,500-1,300 ft (460-400 m)

VERTICAL FALL: 2,400 ft (730 m)

STARTING-ZONE ASPECT: East

INCLINE: Starting zone: 24°

Track: 18°

Runout zone: 11°

STARTING ZONE: Broad, shallow gully covered with low vegetation

TRACK: Begins as shallow gully; lower part open slope with scattered mature deciduous vegetation

RUNOUT ZONE: Bordered by mature spruce; extends to highway; deciduous trees surround summer home in
runout zone

HISTORY:

NOTES:

3.7

NO PHOTO AVAILABLE

SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.7

MILE: 46 - 47

NAME:

LOCATION: Adjacent to south side of Lower Summit Lake on east side of highway

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,100-2,700 ft (1,250-820 m)

Runout zone: 1,300 ft (400 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: Southwest, west, northwest

INCLINE: Starting zone: 28°

Track: 18°

Runout zone: Level

STARTING ZONE: Series of broad, shallow gullies separated by parallel ridges; starting zone covered with low vegetation

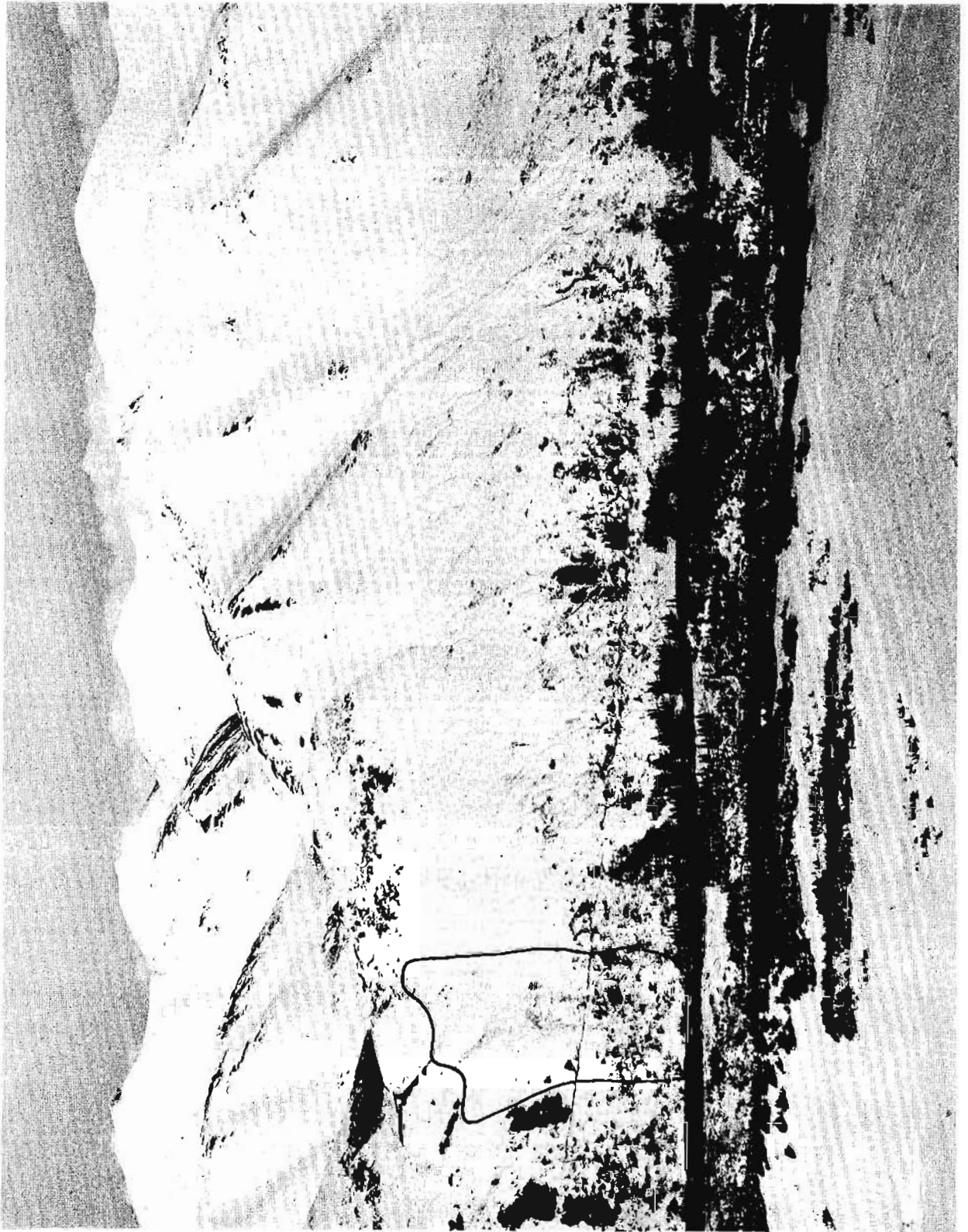
TRACK: Broad, open slope cut by shallow gullies; covered with immature deciduous vegetation

RUNOUT ZONE: Highway and flat, swampy area south of Lower Summit Lake

HISTORY:

NOTES:

3.8-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.8-1

MILE: 48.5

NAME:

LOCATION: West side of road 1.5 mi (2.4 km) north of Lower Summit Lake

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,500-1,900 ft (760-580 m)

Runout zone: 1,400-1,300 ft (430-400 m)

VERTICAL FALL: 1,100 ft (340 m)

STARTING-ZONE ASPECT: East

INCLINE: Starting zone: 30°

Track: 18°

Runout zone: 5°

STARTING ZONE: Series of shallow gullies covered by low vegetation

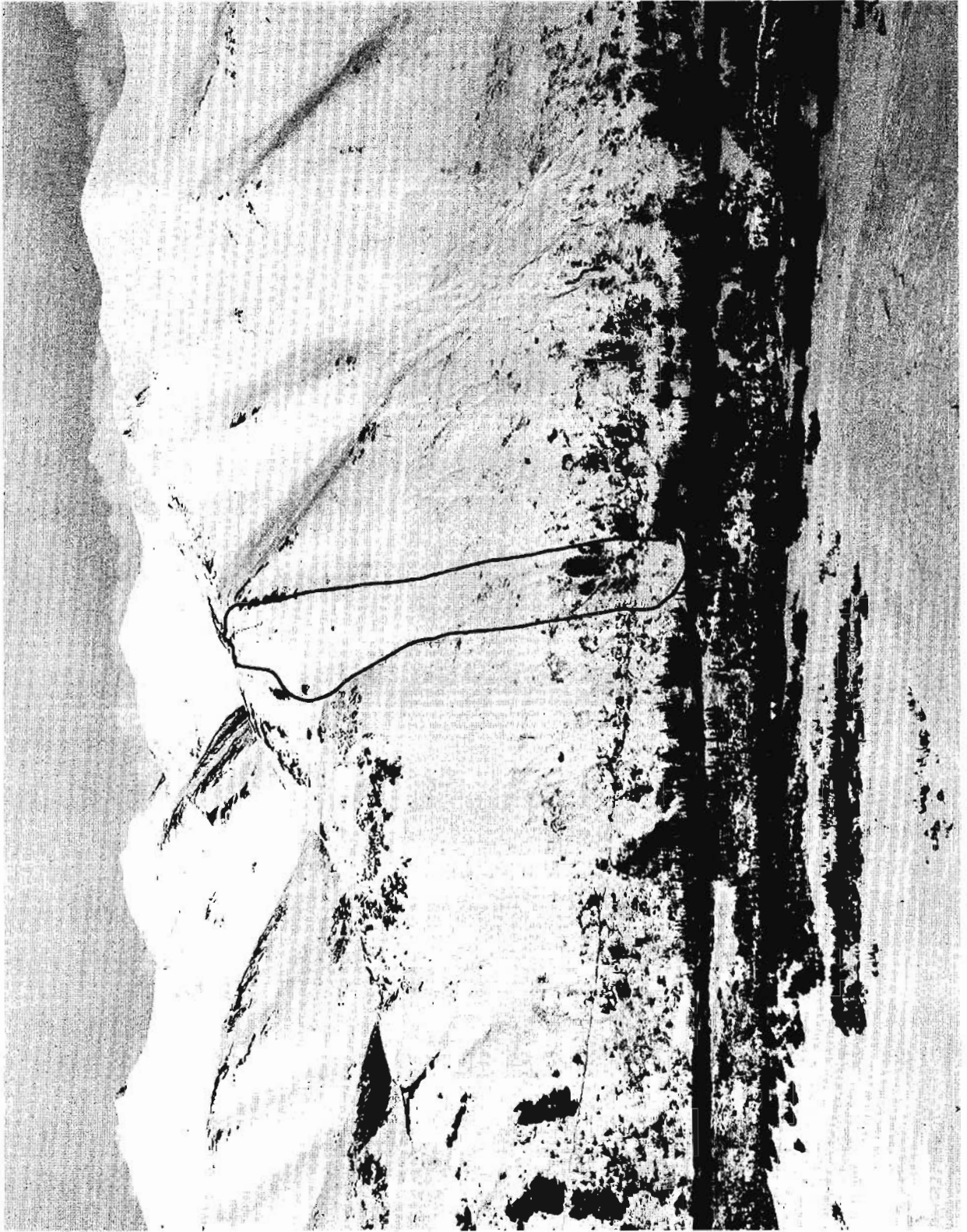
TRACK: Broad, open slope with scattered stands of mature spruce

RUNOUT ZONE: Highway

HISTORY:

NOTES:

3.8-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.8-2

MILE: 49

NAME:

LOCATION: About 2 mi (3.2 km) north of Lower Summit Lake

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,400-2,500 ft (1,040-760 m)

Runout zone: 1,300-1,200 ft (400-370 m)

VERTICAL FALL: 2,200 ft (670 m)

STARTING-ZONE ASPECT: East

INCLINE: Starting zone: 30° Track: 37° Runout zone: 6°

STARTING ZONE: Series of broad, shallow gullies covered with sparse vegetation; gullies separated by low un-vegetated ridges

TRACK: Broad, open slope; bottom of track has some mature coniferous growth

RUNOUT ZONE: Highway

HISTORY:

NOTES:

3.8-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 3.8-3

MILE: 49.5

NAME:

LOCATION: About 2.5 mi (4.0 km) north of Lower Summit Lake on west side of road

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6925, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,500 ft (1,220-760 m)

Runout zone: 1,300-1,000 ft (400-300 m)

VERTICAL FALL: 3,000 ft (910 m)

STARTING-ZONE ASPECT: Southeast, east

INCLINE: Starting zone: 30°

Track: 19°

Runout zone: 8°

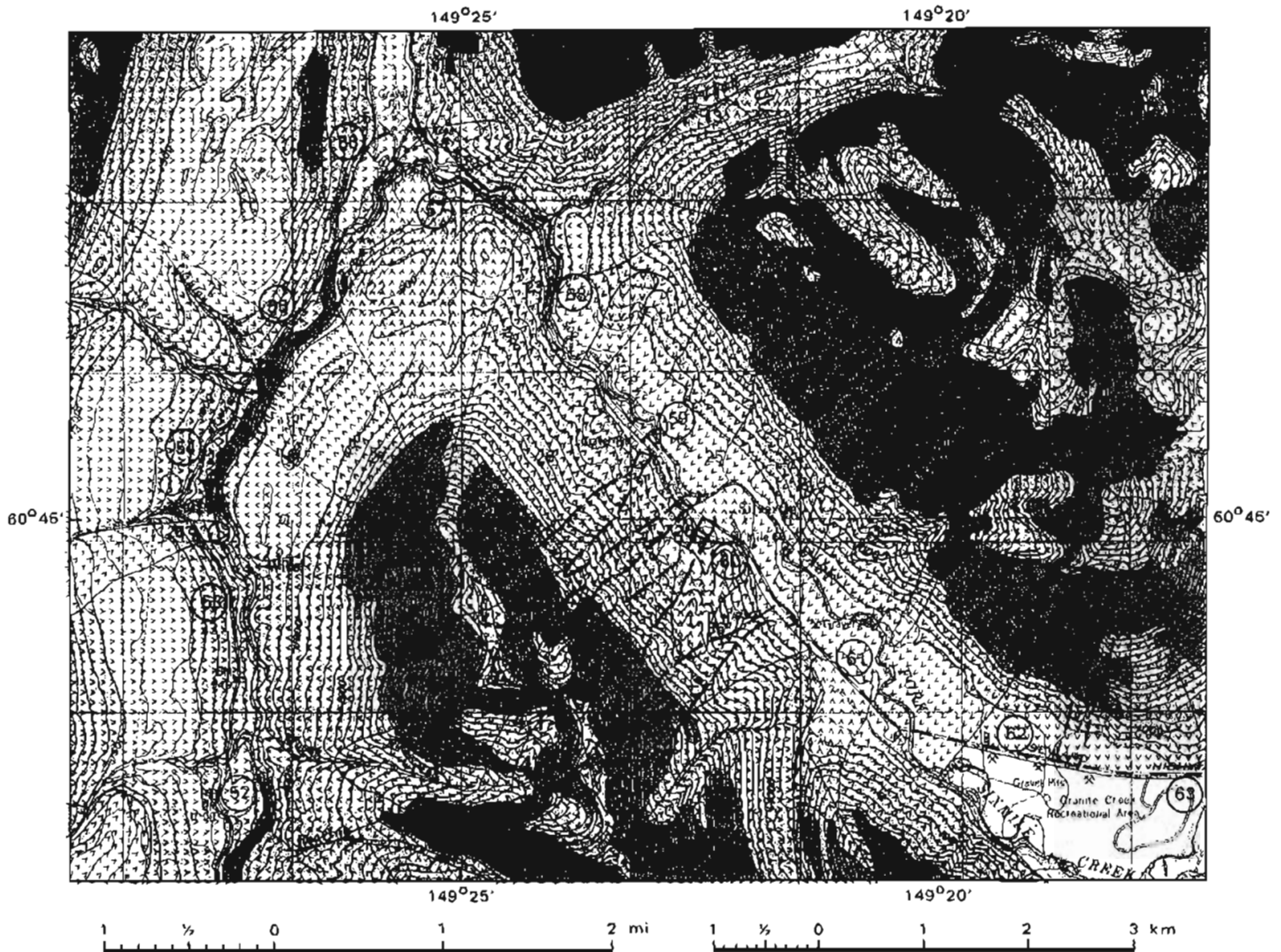
STARTING ZONE: Series of broad, shallow gullies covered with sparse vegetation; gullies separated by low un-vegetated ridges

TRACK: Broad, open slope; bottom of track has some mature coniferous growth

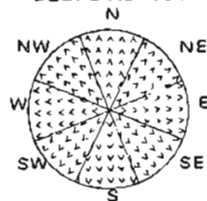
RUNOUT ZONE: Highway

HISTORY:

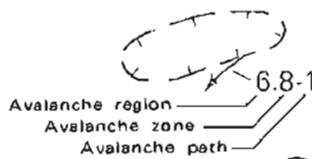
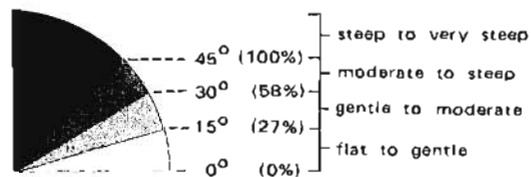
NOTES:



SLOPE ASPECT



SLOPE ANGLE (GRADIENT) - DESCRIPTION



Approximate boundary of avalanche zone or path - Arrow indicates very narrow path.

Identification number - Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

(38) Road mileage

REGION 4

SILVERTIP TO TURNAGAIN PASS

Mile 57 - 62

*Avalanche paths 4.1-1
through 4.3, Silvertip
Creek*

4.1-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.1-1

MILE: 59

NAME:

LOCATION: 2.6 mi (4.2 km) southeast of Hope Road junction, on south side of road

MAP: Seward C-7, D-7 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-2,200 ft (1,160-670 m)

Runout zone: 600-500 ft (180-150 m)

VERTICAL FALL: 3,300 ft (1,010 m)

STARTING-ZONE ASPECT: Northeast, east

INCLINE: Starting zone: 31° Track: 17° Runout zone: 5°

STARTING ZONE: Three narrow gullies below rock cliffs

TRACK: Broad, open slope covered with low vegetation, bordered on each side by mature coniferous trees; island of mature spruce in middle of track; powerline in lower track

RUNOUT ZONE: Crosses highway and extends to opposite side of Granite Creek; downed trees

HISTORY:

NOTES:

4.1-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.1-2

MILE: 59.5

NAME:

LOCATION: 2.5 mi (4.0 km) southeast of Hope Road junction on southwest side of highway

MAP: Seward C-7, D-7 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,200 ft (1,220-670 m)

Runout zone: 600-500 ft (180-150 m)

VERTICAL FALL: 3,500 ft (1,070 m)

STARTING-ZONE ASPECT: East, northeast, north, northwest

INCLINE: Starting zone: 26° Track: 20° Runout zone: 11°

STARTING ZONE: Narrow upper bowl perpendicular to wider lower bowl under rock cliffs

TRACK: Open slope covered by low vegetation; lower track bordered by mature spruce

RUNOUT ZONE: Crosses a powerline; narrow tongue extends to highway and into Granite Creek

HISTORY:

NOTES:

4.1-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.1-3

MILE: 59.6

NAME:

LOCATION: 3.2 mi (5.1 km) southeast of Hope Road junction on southwest side of highway at Silvertip

MAP: Seward C-7, D-7 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,600-2,200 ft (1,100-670 m)

Runout zone: 600-500 ft (180-150 m)

VERTICAL FALL: 3,100 ft (950 m)

STARTING-ZONE ASPECT: Northeast

INCLINE: Starting zone: 34°

Track: 19°

Runout zone: 11°

STARTING ZONE: Several shallow gullies in open slope

TRACK: Broad, open slope covered with low vegetation; powerline crosses lower track

RUNOUT ZONE: Crosses highway; western side extends to Granite Creek

HISTORY: Dec. 22, 1959: Highway blocked

NOTES:

A. 1-4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.1-4

MILE: 60.5

NAME: Silvertip Creek

LOCATION: About 4 mi (6.4 km) southeast of Hope Road junction on southwest side of highway

MAP: Seward C-7, D-7 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,200 ft (1,220-670 m)

Runout zone: 600-500 ft (180-150 m)

VERTICAL FALL: 3,500 ft (1,070 m)

STARTING-ZONE ASPECT: Northeast, east

INCLINE: Starting zone: 34°

Track: 20°

Runout zone: 5°

STARTING ZONE: Rock cliffs and gullies

TRACK: Broad, open slope with scattered deciduous trees; lower track narrows and is bordered by mature coniferous trees

RUNOUT ZONE: Base of slope, extending to highway

HISTORY:

NOTES:

4.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.3

MILE: 62.4

NAME:

LOCATION: 0.4 mi (0.6 km) west of Granite Creek U.S. Forest Service Campground turnoff, on north side of highway

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,600-1,700 ft (1,100-520 m)

Runout zone: 700 ft (210 m)

VERTICAL FALL: 2,900 ft (880 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 33°

Track: 25°

Runout zone: Level

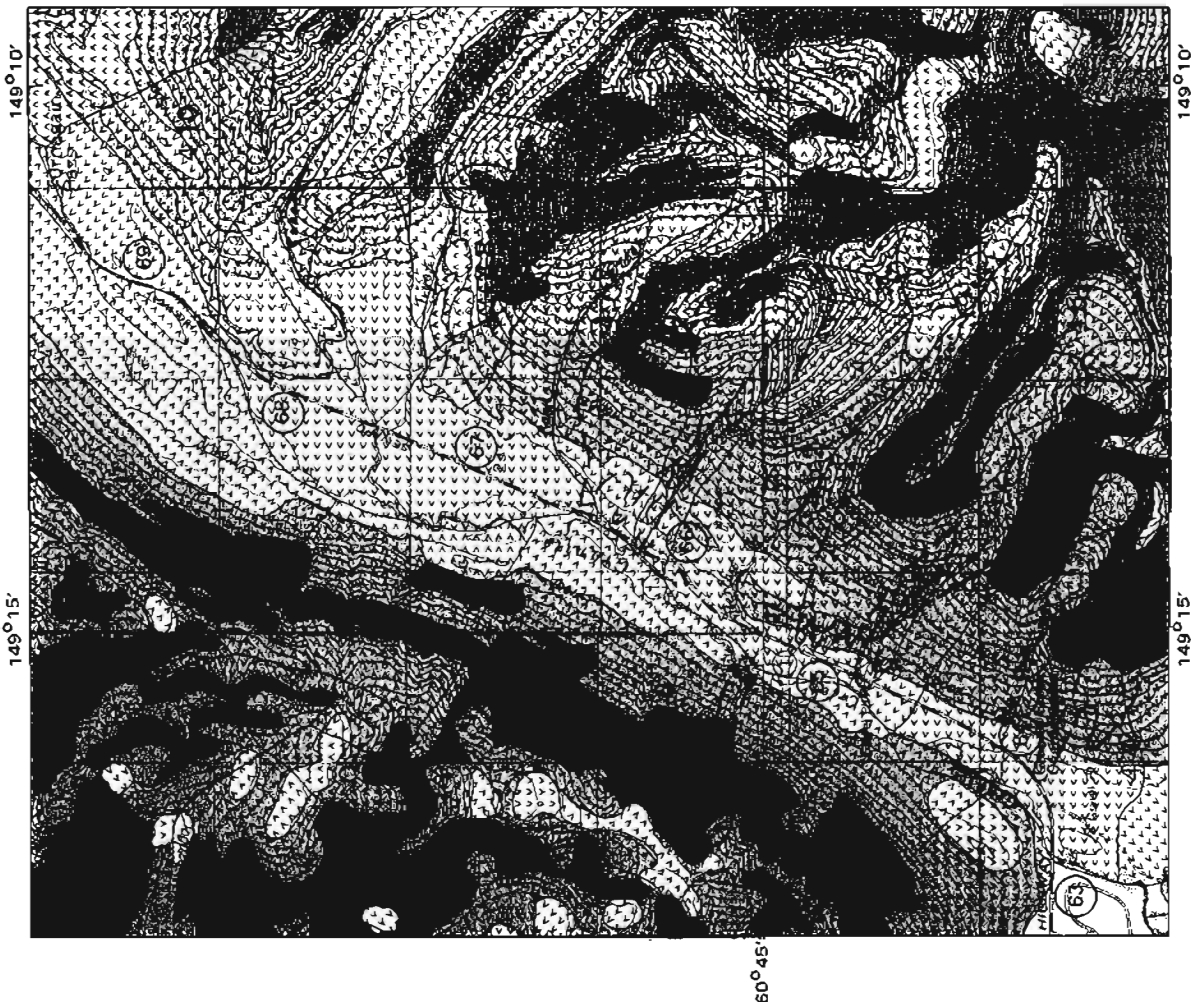
STARTING ZONE: Wide gully with talus and scattered low vegetation

TRACK: Deep gully bordered by open slope with low vegetation

RUNOUT ZONE: Alluvial fan that crosses powerline and runs onto highway in two places; separated by mature coniferous stand

HISTORY:

NOTES:



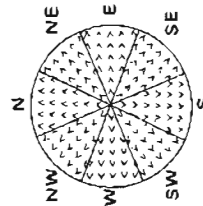
Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

Road mileage

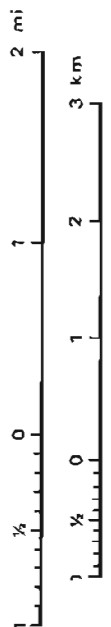
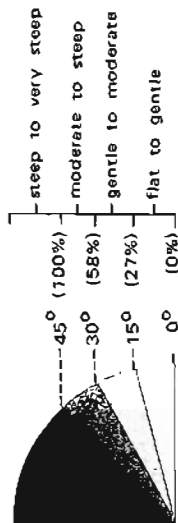
(38)

SLOPE ASPECT



60°45'

SLOPE ANGLE (GRADIENT) — DESCRIPTION



REGION 4

SILVERTIP TO TURNAGAIN PASS

Mile 63 - 76

*Avalanche paths 4.4
through 4.10, Granite
Creek*

4.4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.4

MILE: 63.8

NAME: Granite Creek

LOCATION: 0.1 mi (0.16 km) south of Granite Creek Guard Station

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6659, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,000-1,500 ft (610-460 m)

Runout zone: 800-650 ft (240-200 m)

VERTICAL FALL: 1,350 ft (430 m)

STARTING-ZONE ASPECT: West

INCLINE: Starting zone: 25°

Track: 21°

Runout zone: 8°

STARTING ZONE: Open slope covered with scattered immature deciduous vegetation

TRACK: Open slope bordered by mature coniferous stands; downed trees

RUNOUT ZONE: Flat, swampy area; downed trees

HISTORY:

NOTES:

4.5-1

NO PHOTO AVAILABLE

SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.5-1

MILE: 64.9

NAME: Spokane Creek

LOCATION: Southeast side of road, 0.1 mi (0.16 km) north Spokane Creek bridge

MAP: Seward C-6, D-6 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,500-2,000 ft (1,070-610 m)

Runout zone: 800-700 ft (240-210 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: North, northwest, southwest

INCLINE: Starting zone: 13°

Track: 16°

Runout zone: 11°

STARTING ZONE: Large cirque with rock cliffs; cirque covered with low vegetation

TRACK: Bed of Spokane Creek; lower section bordered by mature spruce; small tributary starting zone joins main gully in lower track

RUNOUT ZONE: Highway

HISTORY:

NOTES:

4.5-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.5-2

MILE: 65

NAME:

LOCATION: East side of road 0.5 mi (0.8 km) south of Bertha Creek Campground

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,400-2,000 ft (1,040-610 m)

Runout zone: 700 ft (210 m)

VERTICAL FALL: 2,600 ft (790 m)

STARTING-ZONE ASPECT: West, northwest, north

INCLINE: Starting zone: 28°

Track: 19°

Runout zone: Level

STARTING ZONE: Broad, open triangular face sparsely covered with low-lying vegetation; evidence of soil movement in starting zone

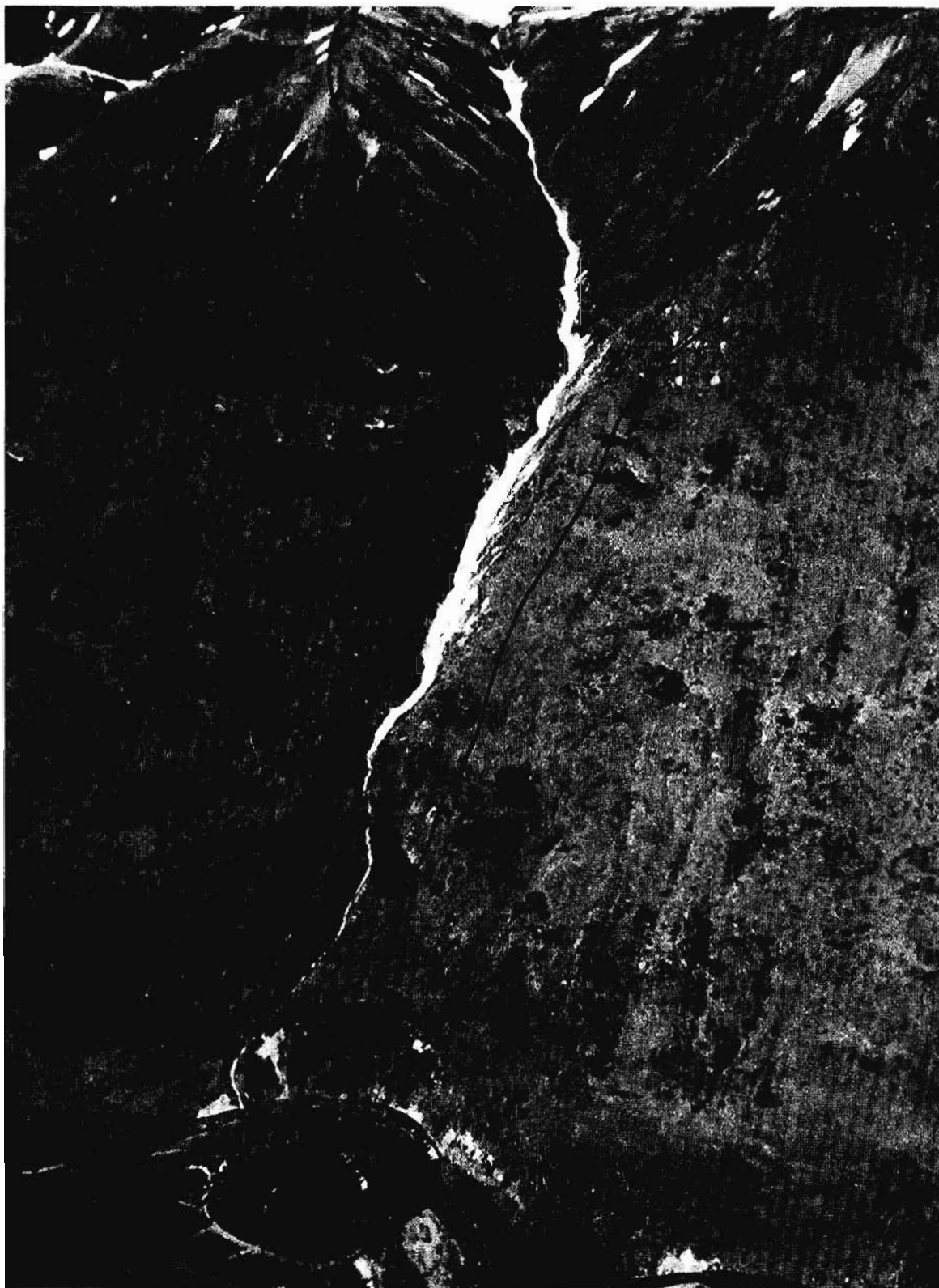
TRACK: Broad, open slope cut by terraces; vegetation cover ranges from low deciduous in center to mature coniferous at borders; many downed trees in track; powerline in lower track

RUNOUT ZONE: Base of slope; small sections may reach highway

HISTORY:

NOTES:

4.6



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.6

MILE: 65.4

NAME: Bertha Creek Campground

LOCATION: At Bertha Creek U.S. Forest Service Campground

MAP: Seward D-7, D-6 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,300-1,900 ft (1,000-580 m)

Runout zone: 900-700 ft (270-210 m)

VERTICAL FALL: 2,500 ft (760 m)

STARTING-ZONE ASPECT: Southeast

INCLINE: Starting zone: 31°

Track: 18°

Runout zone: 11°

STARTING ZONE: Narrow gully fed by steep slopes

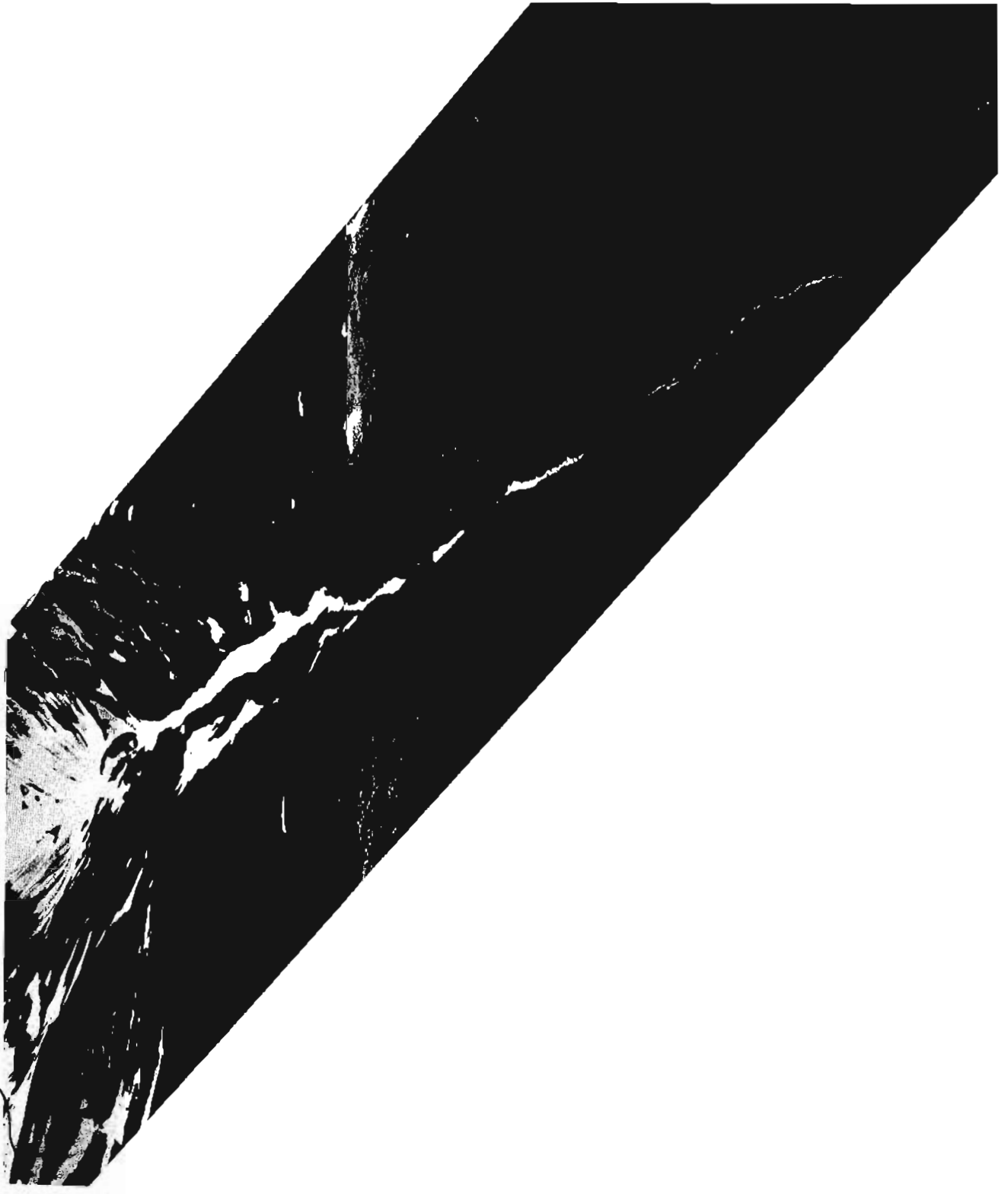
TRACK: Deep gully, occasionally spilling onto open slope on north side

RUNOUT ZONE: Alluvial fan; runout zone crosses Bertha Creek and three campsites

HISTORY:

NOTES:

4.7-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.7-1

MILE: 66.3

NAME:

LOCATION: 0.8 mi (1.3 km) north of Bertha Creek U.S. Forest Service Campground, on east side of road

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,700-1,800 ft (1,130-550 m)

Runout zone: 1,000-850 ft (330-240 m)

VERTICAL FALL: 2,500 ft (760 m)

STARTING-ZONE ASPECT: North, northwest, west

INCLINE: Starting zone: 18°

Track: 14°

Runout zone: 8°

STARTING ZONE: Cirque below rock cliffs

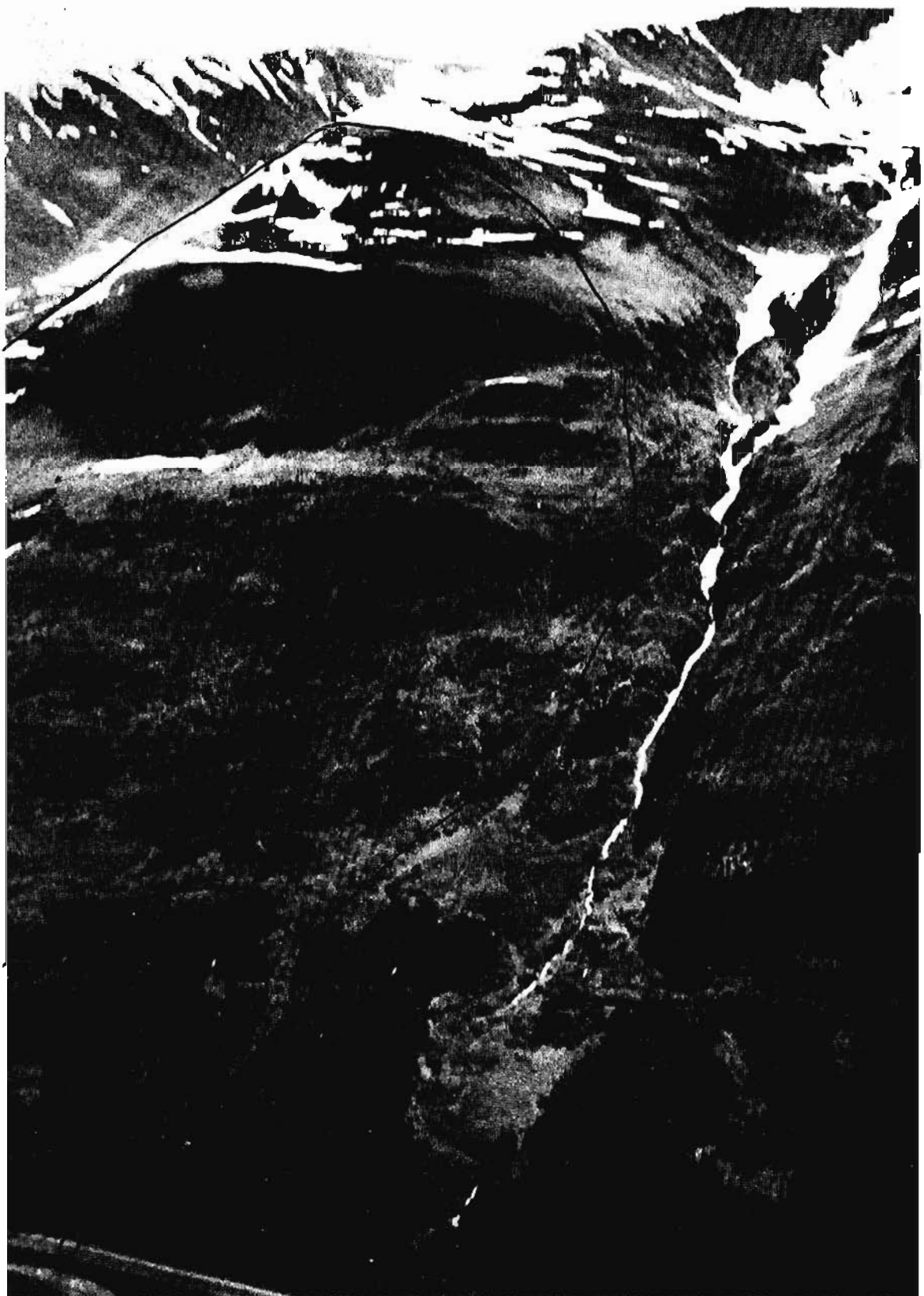
TRACK: Consists of three parts: a) upper part - wide stream gully, b) middle part - narrow, deep gully bordered by open slopes, c) lower part - open slope cut by powerline and bordered by mature coniferous trees; bottom of track passes between two small hills

RUNOUT ZONE: Alluvial fan covered with swamp vegetation and bordered by mature spruce on south side; downed trees in runout zone, which includes highway and Granite Creek

HISTORY: Dec. 17, 1959: Highway blocked

NOTES:

4.7-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 4.7-2

MILE: 66.4, 66.6

NAME:

LOCATION: 3.6 mi (5.8 km) south of Turnagain Pass State Wayside, on east side of road

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,100-1,800 ft (940-550 m)

Runout zone: 1,000-850 ft (330-260 m)

VERTICAL FALL: 2,250 ft (690 m)

STARTING-ZONE ASPECT: West, northwest

INCLINE: Starting zone: 29°

Track: 17°

Runout zone: 9°

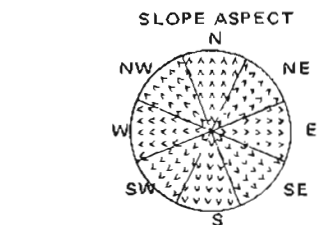
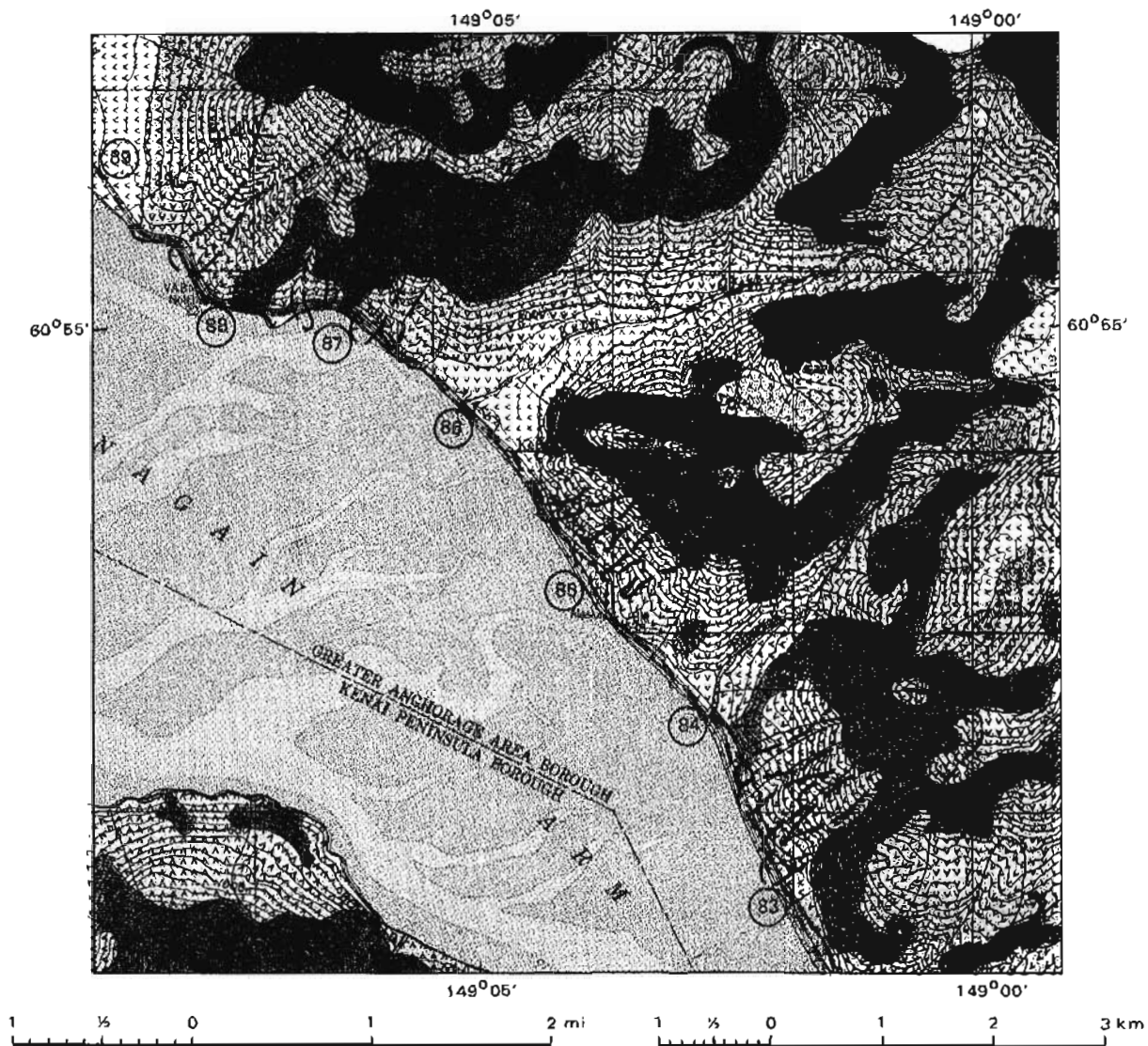
STARTING ZONE: Broad, open slope ending in rock cliff

TRACK: Broad, open slope cut by terraces covered by low vegetation; dense stands of mature coniferous trees present in south end of lower track; stands cut by small auxiliary track; north end of track ends at hill

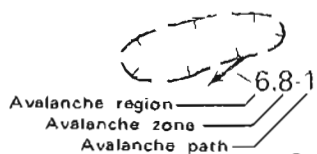
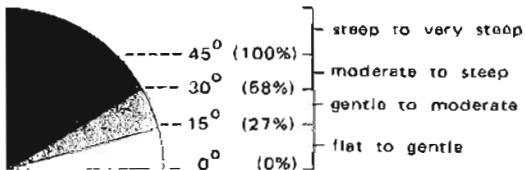
RUNOUT ZONE: North runout comes through gap in hill to alluvial fan covered with swampy vegetation and to highway; south runout is highway

HISTORY:

NOTES:



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone, region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

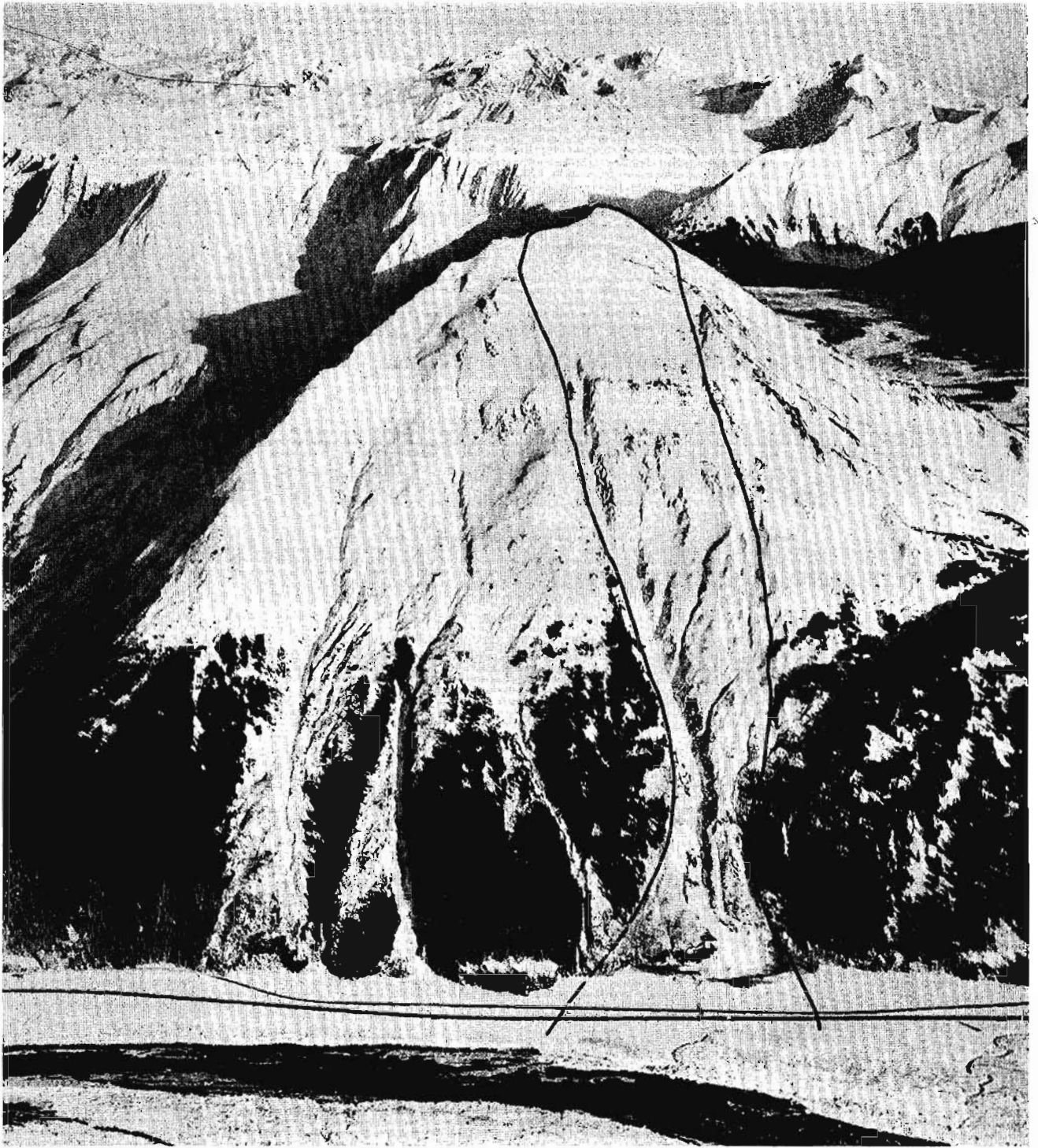
(38) Road mileage

REGION 5

PORTAGE TO GIRDWOOD
Mile 77 - 90

*Avalanche paths 5.1-1
through 5.4, Portage to
Girdwood*

5.1-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.1-1

MILE: 83.4

NAME: Peterson No. 2

LOCATION: 2.5 mi (4.0 km) north of Twentymile River bridge on east side of road

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 MO2662 F6944, CIR, 1:65,000
USGS 1957 BMO230 R58 F7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-1,500 ft (1,160-460 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 3,800 ft (1,160 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 32° Track: 24° Runout zone: 5°

STARTING ZONE: Broad, open slope

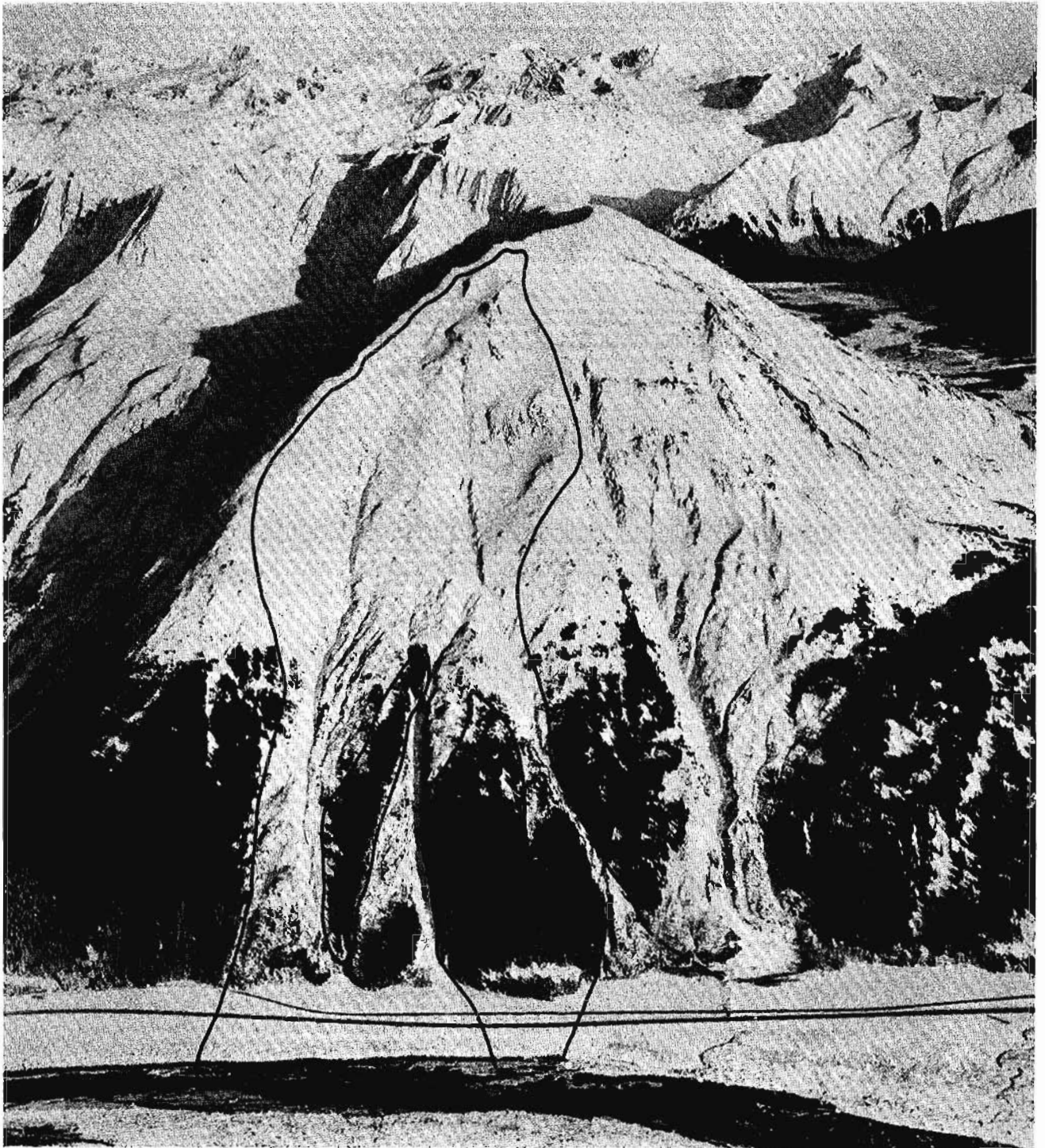
TRACK: Consists of two parts: a) west side, prominent gully, b) east side, rock cliffs below open slope; small gullies below rock cliffs feed into western gully

RUNOUT ZONE: Alluvial fan, railroad, pond, and highway

HISTORY: Jan. 22, 1978: Highway blocked

NOTES:

5.1-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5,1-2

MILE: 83.7

NAME: Peterson No. 1

LOCATION: 2.8 mi (4.5 km) north of Twentymile River bridge on east side of road

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6944, CIR, 1:65,000
USGS 1957 BMO230 R58 F7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,600-1,500 ft (1,100-460 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 3,600 ft (1,100 m)

STARTING-ZONE ASPECT: West, southwest

INCLINE: Starting zone: 34°

Track: 27°

Runout zone: 6°

STARTING ZONE: Shallow bowl

TRACK: Consists of three parts: a) western track, prominent gully surrounding open slope covered with low vegetation; b) central part, open slope feeding into gully bordered by mature coniferous trees; downed trees in track; c) eastern track, prominent gully bordered by mature coniferous trees

RUNOUT ZONE: Three alluvial fans, pond, and highway

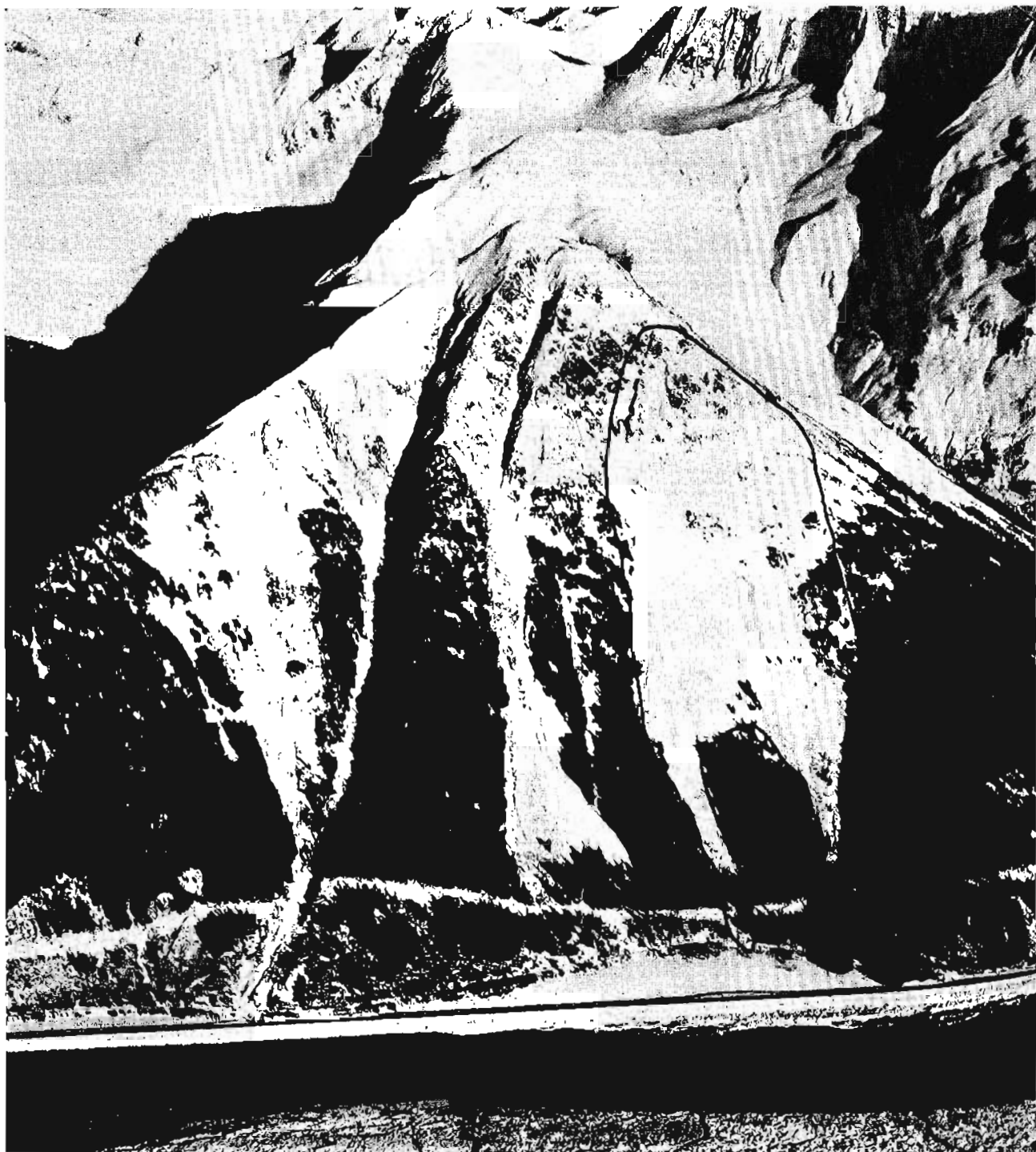
HISTORY: Jan. 22, 1978: Highway blocked

Apr. 1973: One vehicle hit and damaged

Apr. 1971: One vehicle hit and destroyed, two occupants injured

NOTES:

5.2-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.2-1

MILE: 84.9

NAME:

LOCATION: 0.7 mi (1.1 km) north of Peterson Creek

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO222 R42 F5411, 5412, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,300-1,400 ft (700-430 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 2,300 ft (700 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 40°

Track: 30°

Runout zone: 11°

STARTING ZONE: Rocky, open slope

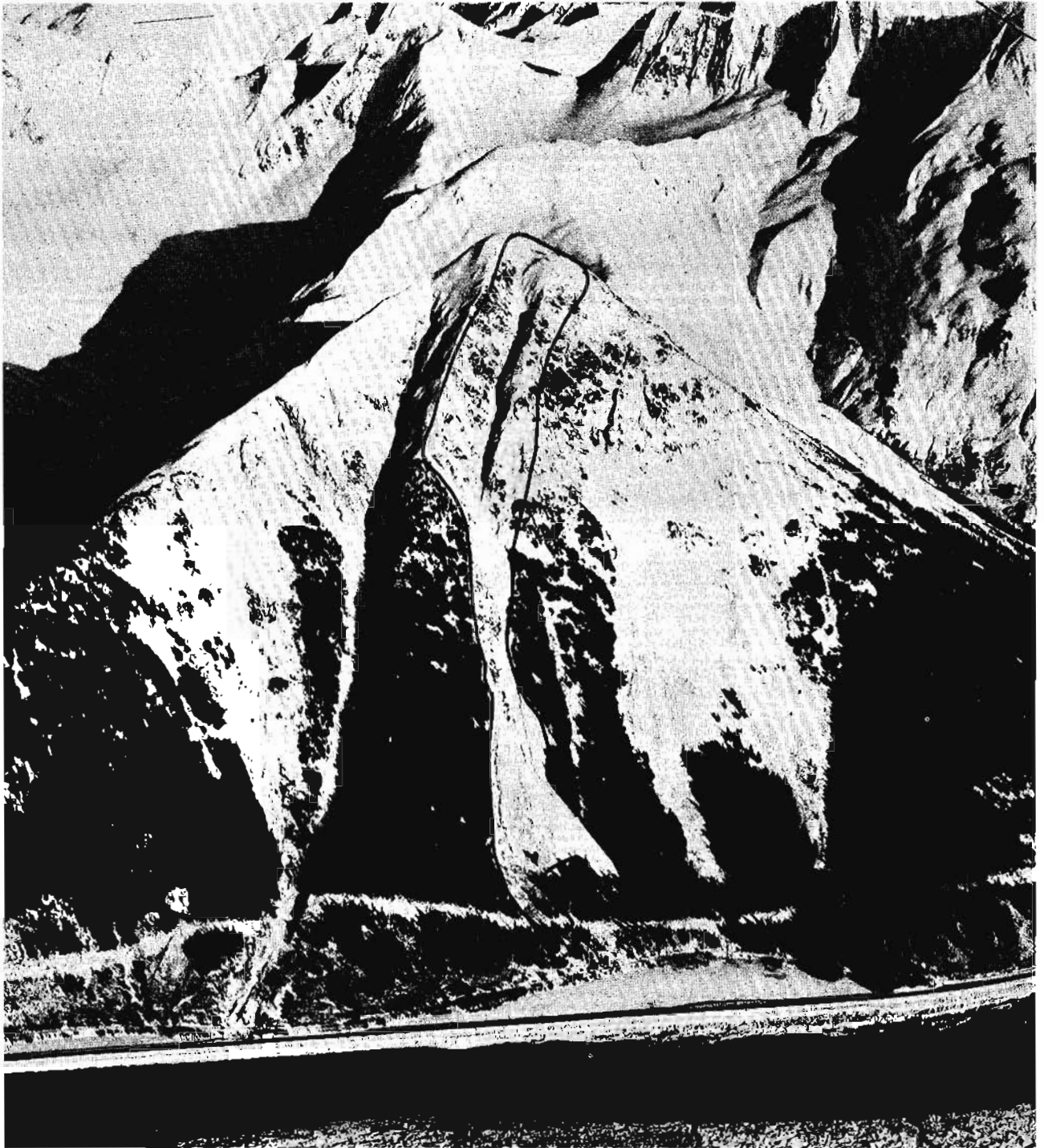
TRACK: Open slope covered with low vegetation; lower track divided into two parts by dense stand of conifers

RUNOUT ZONE: Base of slope and powerline

HISTORY: Dec. 17, 1959: Railroad blocked

NOTES:

5.2-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.2-2

MILE: 85

NAME:

LOCATION: 0.8 mi (1.3 km) north of Peterson Creek

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO226 R42 F5411, 5412, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,000-1,400 ft (910-430 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 3,000 ft (910 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 44°

Track: 35°

Runout zone: 21°

STARTING ZONE: Narrow gully below rock cliffs

TRACK: Narrow gully bordered by mature coniferous vegetation; ends in open slope

RUNOUT ZONE: Base of slope and powerline

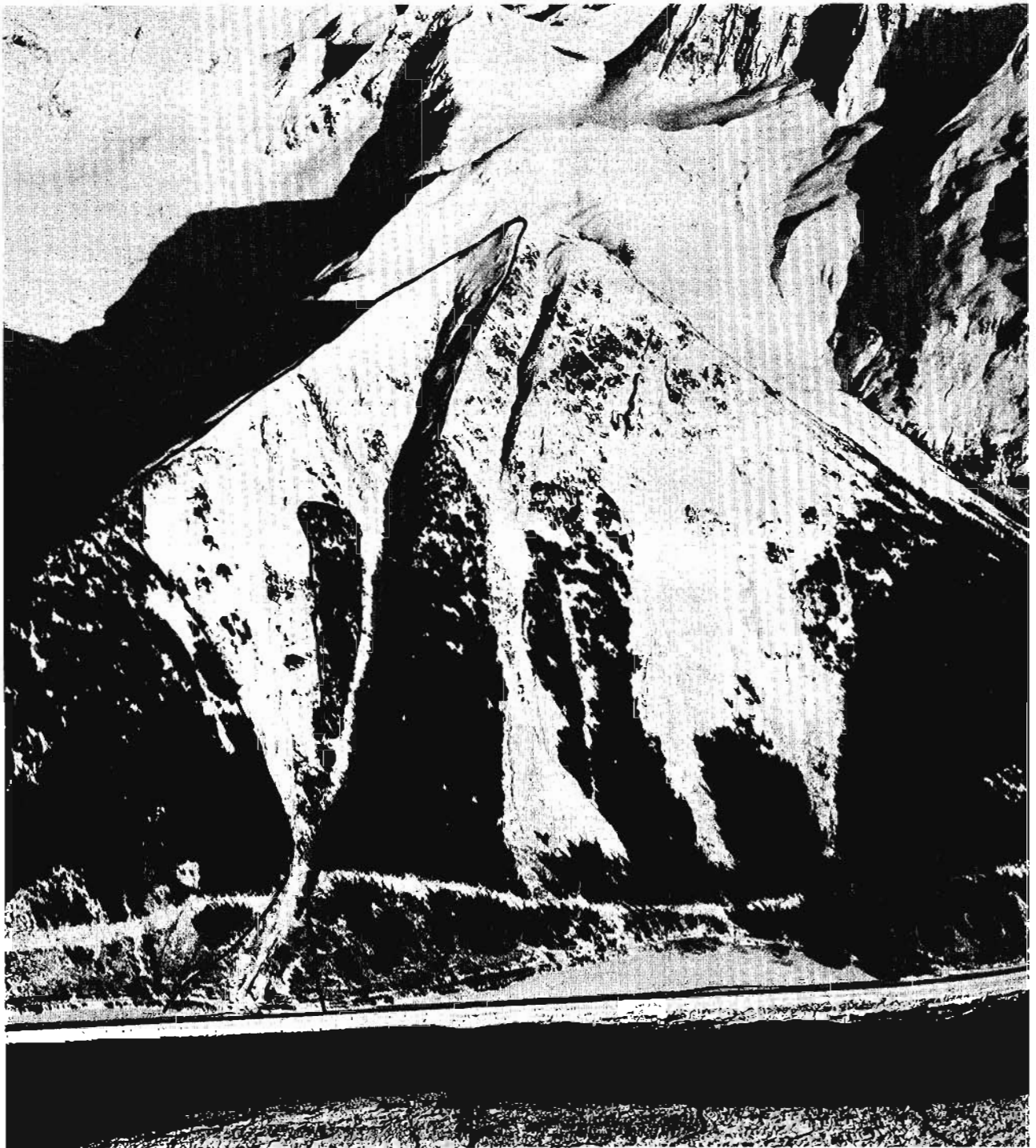
HISTORY: Jan. 22, 1978: Highway blocked

Feb. 5, 1941: Train derailed

Jan. 5, 1920: Train derailed

NOTES:

5.2-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.2-3

MILE: 85.4

NAME:

LOCATION: 1.2 mi (1.9 km) north of Peterson Creek

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO222 R42 F 5411, 5412, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,000-1,400 ft (910-430 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 3,000 ft (910 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 37°

Track: 24°

Runout zone: 21°

STARTING ZONE: Series of gullies on east, open slope on west

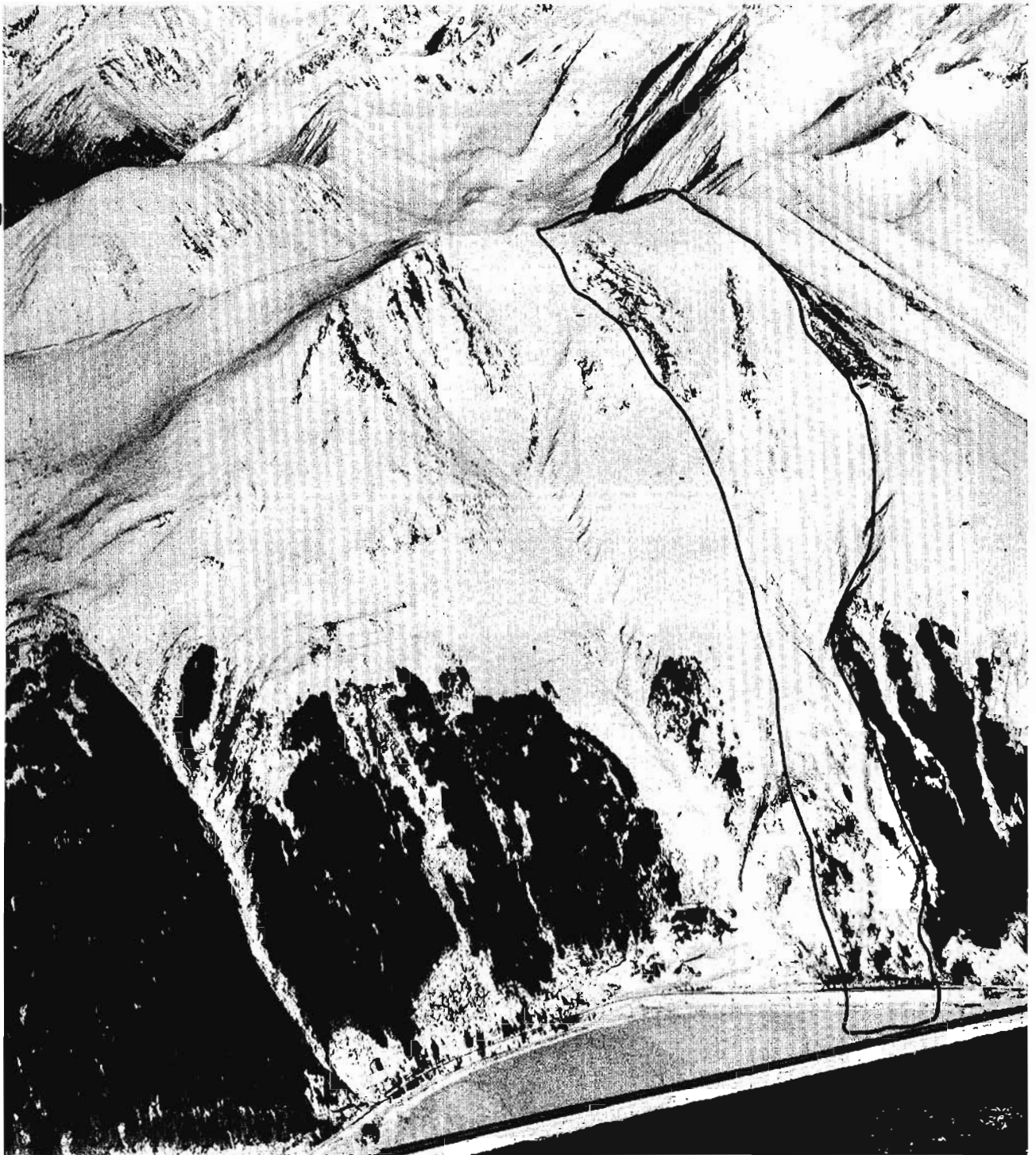
TRACK: Prominent gully on east and open slope on west that feeds into gully at its base

RUNOUT ZONE: Powerline, open slope, pond, and highway

HISTORY: Jan. 20, 1961: Railroad blocked
Jan. 4, 1920: Railroad blocked

NOTES:

5.3-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.3-1

MILE: 86.7

NAME: Kern No. 4

LOCATION: 3.3 mi (5.3 km) south of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000

USGS 1957 BM0222 R42 F5411; BMO230 R58 F7563, 7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,300-1,300 ft (1,010-400 m)

Runout zone: 50-0 ft (15-0 m)

VERTICAL FALL: 3,300 ft (1,010 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 32°

Track: 26°

Runout zone: 11°

STARTING ZONE: Two shallow gullies in slope broken by rock ridges

TRACK: Three gullies that merge into one large, sinuous gully; bordered on east by mature coniferous trees

RUNOUT ZONE: Railroad, pond, and highway

HISTORY: Jan. 22, 1978: Highway blocked

Dec. 20, 1959: Railroad and highway blocked

Dec. 17, 1959: Railroad and highway blocked by two slides

Apr. 10, 1959: Railroad and highway blocked

Mar. 6, 1959: Railroad and highway blocked

Feb. 1946: Railroad blocked

NOTES:

5.3-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.3-2

MILE: 86.8

NAME: Kern No. 3

LOCATION: 3.2 mi (5.1 km) south of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO222 R42 F5411; BMO230 F58 F7563, 7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,200-1,300 ft (980-400 m)

Runout zone: 50-0 ft (15-0 m)

VERTICAL FALL: 3,200 ft (975 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 29°

Track: 25°

Runout zone: 5°

STARTING ZONE: Rocky slope cut by large gully

TRACK: Open, vegetated slope cut by prominent gully; mature coniferous stand on western border

RUNOUT ZONE: Railroad, pond, and highway

HISTORY: Jan. 22, 1978: Highway blocked

Jan. 31, 1962: Highway blocked

Feb. 28, 1961: Railroad and highway blocked (artillery)

Jan. 20, 1961: Railroad and highway blocked (artillery)

Jan. 19, 1961: Railroad and highway blocked by two slides (artillery)

Jan. 18, 1961: Railroad blocked

Jan. 12, 1961: Railroad and highway blocked

Dec. 20, 1959: Highway blocked

Dec. 17, 1959: Railroad and highway blocked by two slides

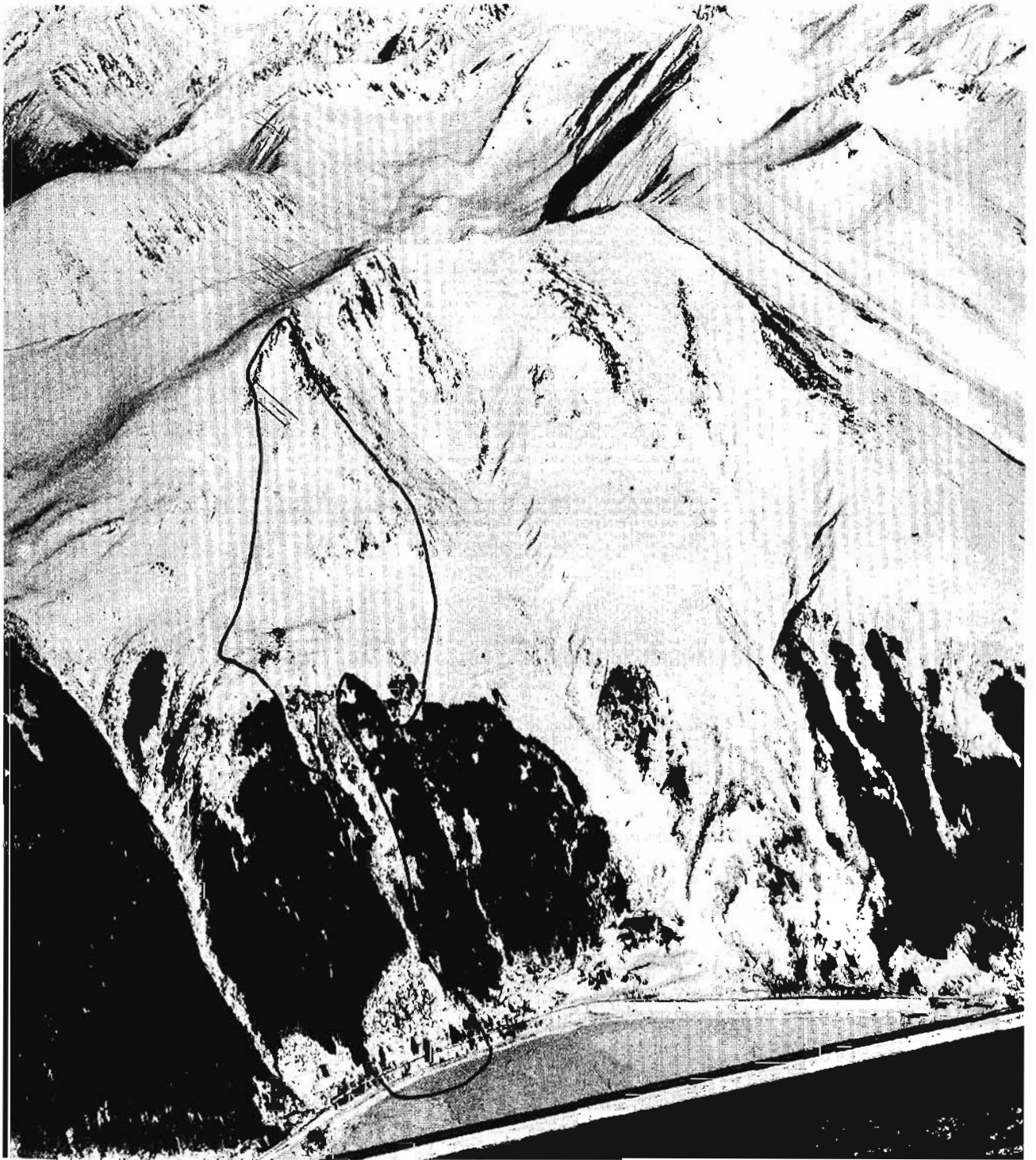
Apr. 10, 1959: Railroad and highway blocked

Mar. 7, 1959: Railroad blocked

Mar. 6, 1959: Railroad and highway blocked

NOTES:

5.3-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.3-3

MILE: 87.1

NAME: Kern No. 2

LOCATION: 3 mi (4.8 km) south of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO222 R42 F5411; BMO230 R58 F7563, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,600-1,300 ft (800-400 m)

Runout zone: 50-0 ft (15-0 m)

VERTICAL FALL: 2,600 ft (800 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 26°

Track: 28°

Runout zone: 18°

STARTING ZONE: Broad, open, tundra-covered slope

TRACK: Open slope covered by immature deciduous vegetation, bordered by mature coniferous vegetation

RUNOUT ZONE: Base of slope, pond, and highway

HISTORY: Jan. 22, 1978: Highway blocked

Nov. 8, 1918: Railroad blocked

NOTES:

5.3-4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.3-4

MILE: 87.3

NAME: Kern No. 1

LOCATION: 2.7 mi (4.3 km) south of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6945, CIR, 1:65,000
USGS 1957 BMO222 R42 F5411; BMO230 R58 F7563, 7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,600-1,300 ft (800-400 m)

Runout zone: 50.0 ft (15.0 m)

VERTICAL FALL: 2,600 ft (800 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 39°

Track: 22°

Runout zone: 18°

STARTING ZONE: Gully with tributaries

TRACK: Deep, narrow creek gully bordered by dense, mature coniferous stands

RUNOUT ZONE: Alluvial fan, railroad, pond, and occasionally highway

HISTORY: Jan. 22, 1978: Highway blocked

Jan. 2, 1960: Highway blocked

NOTES:

5.4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 5.4

MILE: 88,

NAME:

LOCATION: 2 mi (3.2 km) south of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO222 R42 F 5411; BMO230 R58 F7563, 7564, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,600-900 ft (800-270 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 2,600 ft (800 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 23°

Track: 21°

Runout zone: 5°

STARTING ZONE: Two shallow bowls covered by tundra vegetation

TRACK: Sinuous gully bordered by mature coniferous vegetation; immature coniferous vegetation covers slope west of gully

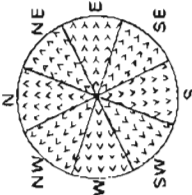
RUNOUT ZONE: Gully that empties into pond, runs across railroad and occasionally to highway

HISTORY: Jan. 22, 1978: Highway blocked

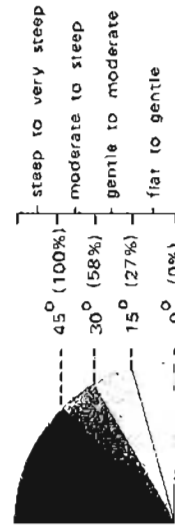
NOTES:



SLOPE ASPECT



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

38 Road mileage

Avalanche region
Avalanche zone
Avalanche path

B A
VI

Avalanche zone and path as designated in Alaska Department of Highways (1963)

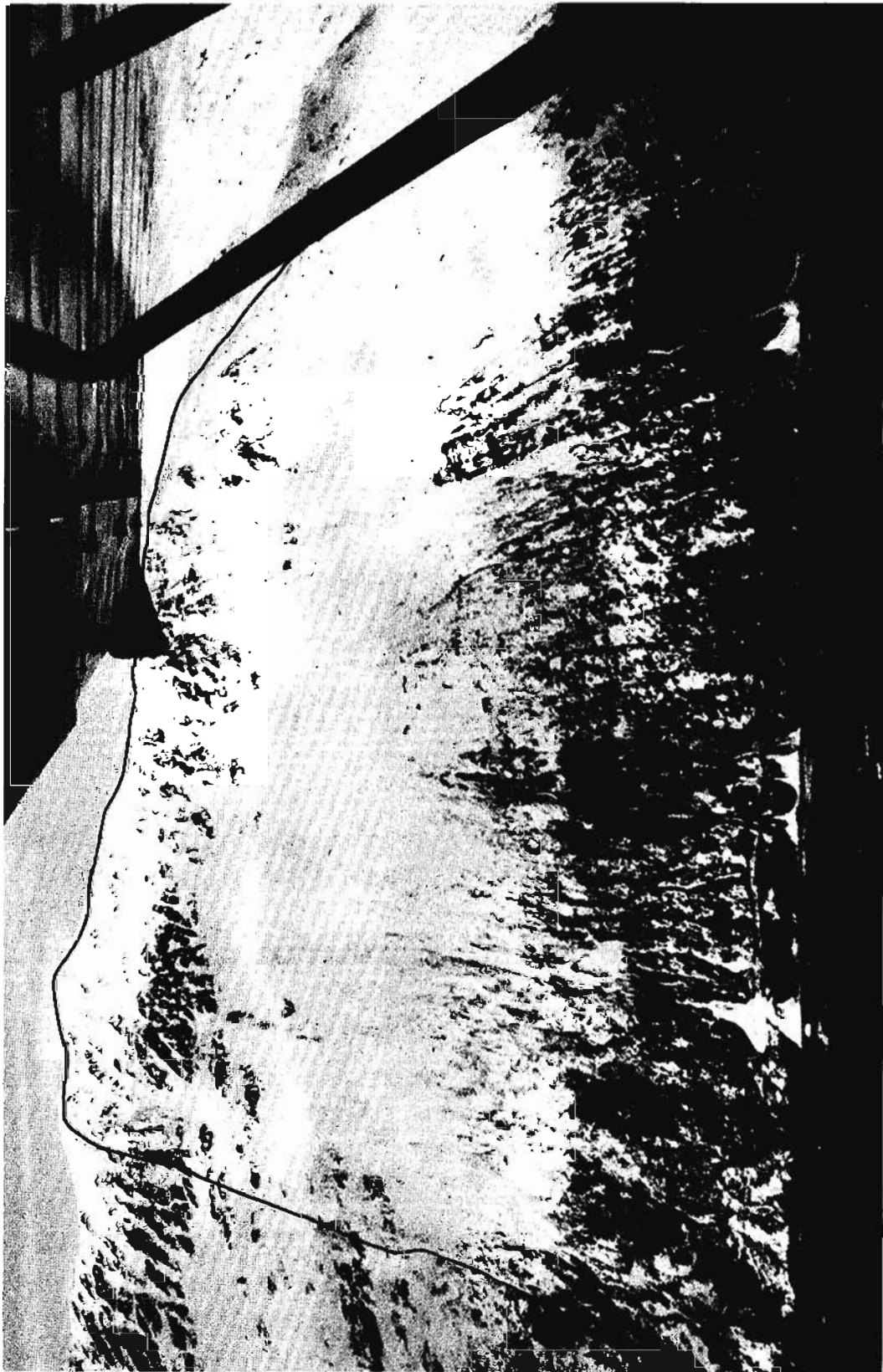
REGION 6

PENGUIN RIDGE

Mile 91 - 101

*Avalanche paths 6.1
through 6.8-5,
Penguin Ridge*

6.1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.1

MILE: 91 - 92

NAME:

LOCATION: 1 mi (1.6 km) north of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,900-2,000 ft (885-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 2,900 ft (885 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 40°

Track: 29°

Runout zone: Level

STARTING ZONE: Rock cliffs and gullies

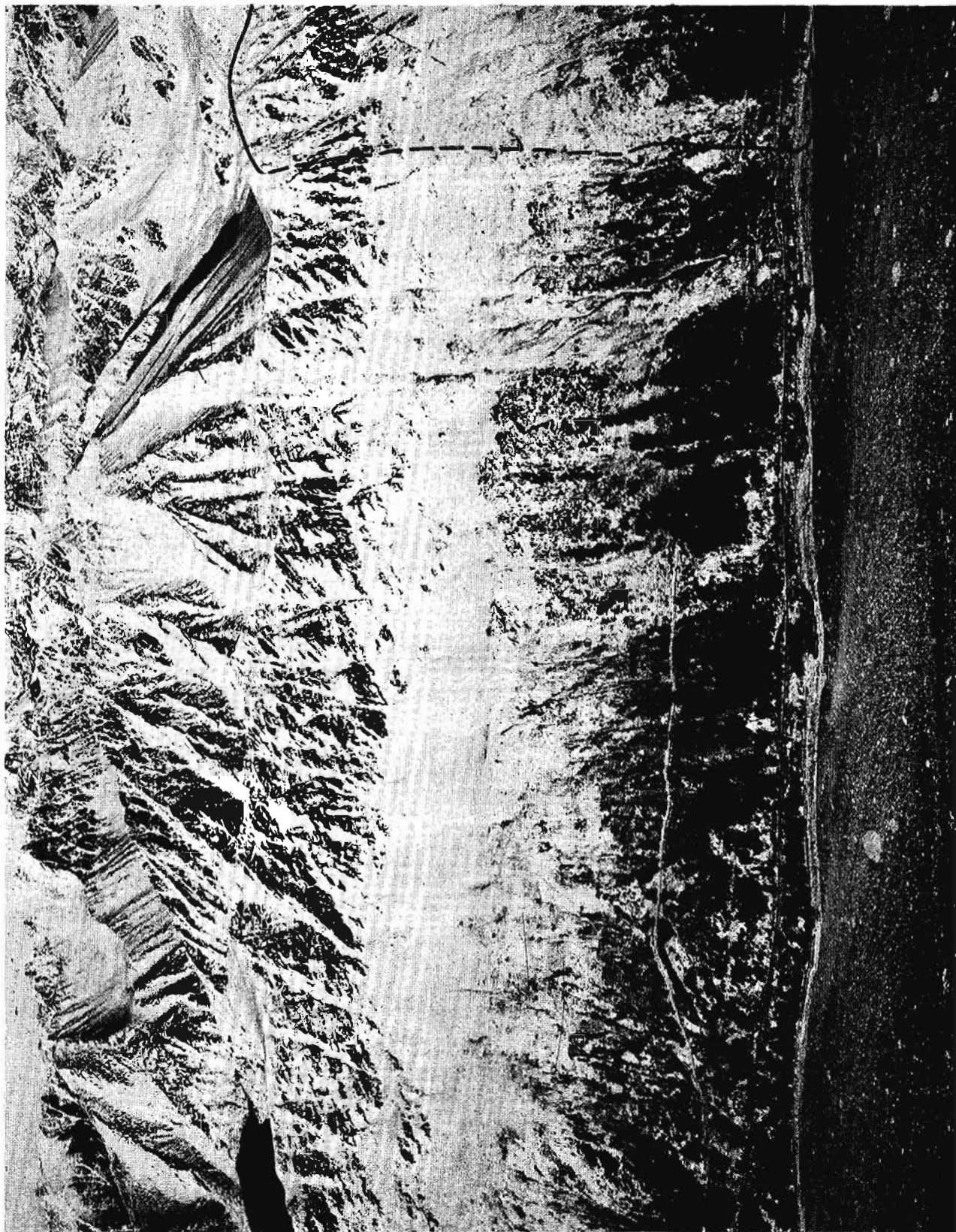
TRACK: Broad, open slope covered by low vegetation; lower track has immature coniferous and scattered deciduous vegetation

RUNOUT ZONE: Highway, railroad track, and Turnagain Arm

HISTORY Mar. 23, 1979: Highway and railroad track blocked
Jan. 22, 1978: Highway blocked
Feb. 20, 1962: Highway blocked
Apr. 18, 1960: Highway blocked by two slides
Feb. 28, 1960: Highway blocked
Dec. 27, 1959: Highway blocked
Dec. 22, 1959: Highway and railroad tracks blocked
Dec. 21, 1959: Highway blocked
Dec. 17, 1959: Highway blocked by three slides
Apr. 9, 1959: Highway blocked by two slides
Apr. 8, 1959: Railroad blocked
Jan. 6, 1958: One vehicle hit
Feb. 26, 1956: Highway blocked
Jan. 6, 1952: One pedestrian killed, one car destroyed
Winter 1920: Two rotaries derailed, two persons injured (present highway alignment)
Apr. 20, 1920: Six railroad workers killed, 19 trapped or injured (present highway alignment)
Feb. 1913: Bird Hill trail (400 ft above present road) blocked
Feb. 11, 1911: Bird Hill trail blocked

NOTES: Zone I in Alaska Dept. of Highways (1963)

6.2-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.2-1

MILE: 92.2

NAME:

LOCATION: 2.2 mi (3.5 km) west of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,800-2,000 ft (850-600 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 37°

Track: 27°

Runout zone: 5°

STARTING ZONE: Rock cliffs and gullies

TRACK: Broad, open slope covered by low vegetation; lower track bordered by mature coniferous trees

RUNOUT ZONE: Highway, railroad, and Turnagain Arm

HISTORY: Mar. 23, 1979: Highway blocked for 4 days

Jan. 22, 1978: Highway blocked

Feb. 20, 1962: Highway blocked

Dec. 17, 1959: Highway blocked by two slides

Mar. 6, 1959: Highway blocked

Feb. 1913: Bird Hill trail (400 ft above road) blocked

Feb. 1911: Bird Hill trail blocked

NOTES: Zone IIA of Alaska Dept. of Highways (1963)

6.2-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.2-2

MILE: 92.5

NAME:

LOCATION: 2.1 mi (4 km) west of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,800-2,000 ft (850-600 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 37°

Track: 29°

Runout zone: 11°

STARTING ZONE: Rock cliffs and gullies

TRACK: Broad, open slope covered with low vegetation and cut by shallow gullies; lower track bordered by mature coniferous trees

RUNOUT ZONE: Highway, railroad, and Turnagain Arm

HISTORY: Mar. 23, 1979: Highway blocked for 4 days

Jan. 22, 1978: Highway blocked

Feb. 20, 1962: Highway blocked

Jan. 20, 1961: Highway and railroad blocked

Dec. 26, 1959: Highway blocked

Dec. 17, 1959: Highway blocked by two slides

Mar. 6, 1959: Highway blocked by two slides - two cars drove into slides

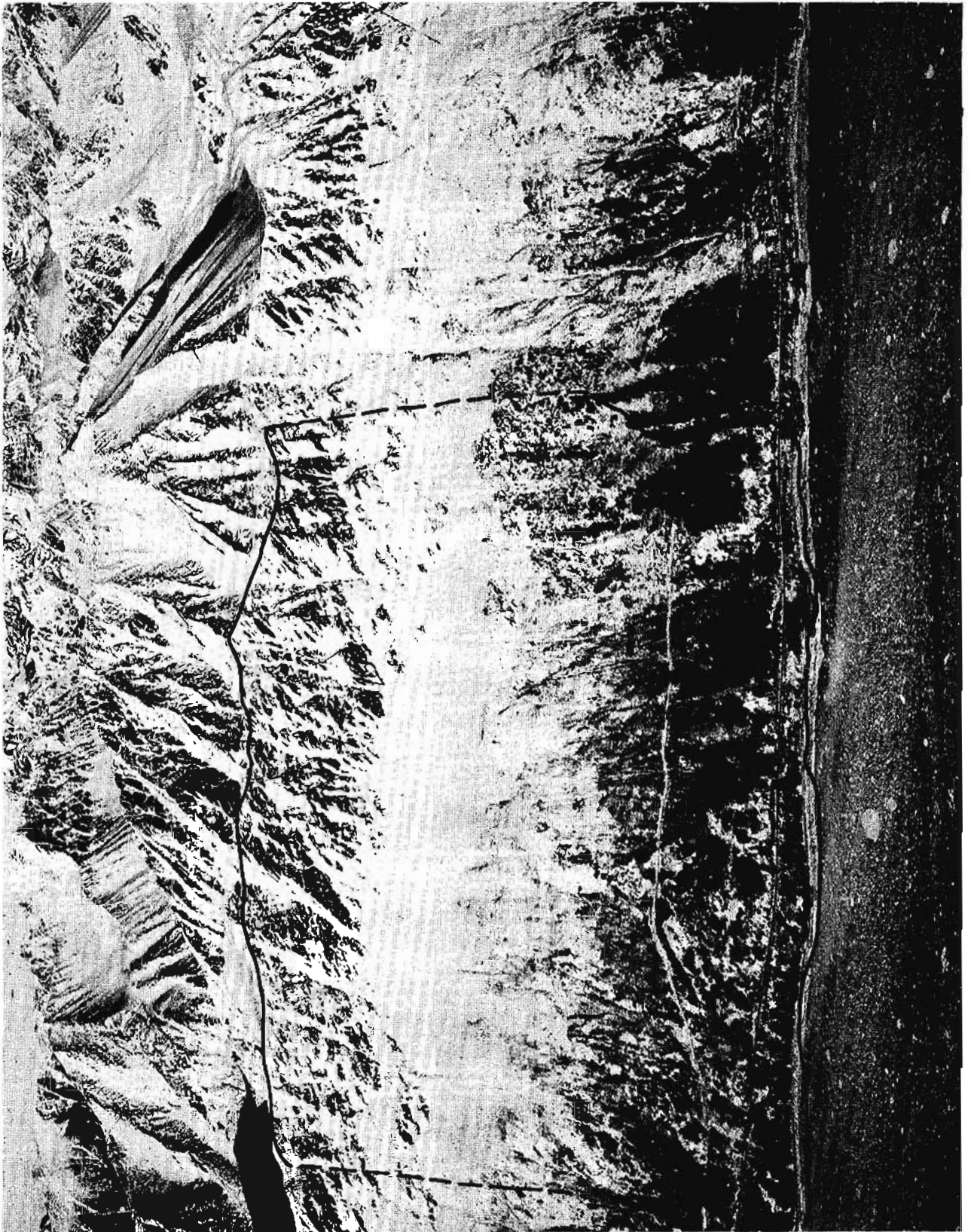
Jan. 6, 1958: Highway blocked

Feb. 1913: Bird Hill trail blocked

Feb. 1911: Bird Hill trail blocked

NOTES: Zone IIB of Alaska Dept. of Highways (1963)

6.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.3

MILE: 92.8 - 93.4

NAME:

LOCATION: 2.8 mi (4.5 km) west of Girdwood junction

MAP: Seward D-6 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F 5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,800-2,000 ft (850-600 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 37°

Track: 27°

Runout zone: 11°

STARTING ZONE: Rock cliffs and gullies

TRACK: Broad, open slope covered by low vegetation; lower track has scattered stands of mature coniferous trees

RUNOUT ZONE: Highway, railroad, and Turnagain Arm; scattered stands of deciduous trees below highway

HISTORY: Jan. 18, 1980: Highway blocked

Mar. 23, 1979: Highway blocked for 4 days

Jan. 22, 1978: Highway blocked

Feb. 1, 1960 Highway partially blocked

Jan. 31, 1960: Railroad blocked

Dec. 27, 1959: Vehicle hit by slide

Dec. 21, 1959: Highway blocked, new path cut through timber at east end

Dec. 17, 1959: Highway blocked

Feb. 1913: Bird Hill trail (600 ft above present road) blocked

Feb. 1911: Bird Hill trail blocked

NOTES: Rusty Volkswagen visible below road

Zone III of Alaska Dept. of Highways (1963)

6.4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.4

MILE: 93.8 - 94.1

NAME: Superscooper

LOCATION: 3.8 mi (2 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F 5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,900-2,000 ft (880-600 m)

Runout zone: 300-0 ft (90-0 m)

VERTICAL FALL: 2,900 ft (880 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 40°

Track: 33°

Runout zone: 13°

STARTING ZONE: Rock cliffs and numerous small gullies

TRACK: Broad, open slope covered with low vegetation; rock bands in center

RUNOUT ZONE: Highway, slope below highway, railroad, and Turnagain Arm; bordered by mature deciduous vegetation; communications tower at ocean edge in runout zone

HISTORY: Jan. 22, 1980: One vehicle hit and damaged; four locomotives and 13 train cars derailed

Jan. 20, 1980: One vehicle hit and damaged

Jan. 18, 1980: Highway blocked

Jan. 17, 1980: Highway blocked

Mar. 23, 1979: Highway blocked for 4 days

Feb. 13, 1978: Highway blocked

Jan. 22, 1978: Highway blocked

Mar. 13, 1962: Highway blocked

Feb. 20, 1962: Highway and railroad blocked by five slides

Jan. 9, 1962: Highway blocked (artillery)

Jan. 8, 1962: Highway blocked

Apr. 21, 1960: Highway blocked (artillery)

Mar. 2, 1960: Highway blocked at east end

Feb. 1, 1960: Highway blocked

Jan. 17, 1960: Highway partially blocked

Dec. 27, 1959: Highway blocked by four slides

Dec. 26, 1959: Highway blocked

Dec. 23, 1959: Highway blocked

Dec. 22, 1959: Highway blocked

Dec. 19, 1959: Highway blocked

Dec. 17, 1959: Highway blocked by three slides

Mar. 10, 1959: Highway blocked (artillery)

Jan. 6, 1958: Highway and railroad blocked

Feb. 1913: Bird Hill trail (200 ft above present road) blocked

Feb. 1911: Bird Hill trail blocked

NOTES: Zone IV in Alaska Dept. of Highways (1963)

6.4-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.4-1

MILE: 93.7

NAME: Whiskey Gulch

LOCATION: 3.7 mi (2 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,900-2,000 ft (885-600 m)

Runout zone: 300-0 ft (90-0 m)

VERTICAL FALL: 2,900 ft (885 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 40°

Track: 30°

Runout zone: 13°

STARTING ZONE: Broad gully in rock cliffs

TRACK: Broad, open slope covered with low vegetation; cut by rock bands in center

RUNOUT ZONE: Rock cliff above highway, highway, slope below highway, railroad, and Turnagain Arm

HISTORY: Jan. 18, 1980: Highway blocked
Mar. 23, 1979: Highway blocked for 4 days
Jan. 22, 1978: Highway blocked
Feb. 1, 1960: Highway blocked
Dec. 27, 1959: Highway blocked
Dec. 17, 1959: Highway blocked
Jan. 6, 1958: Highway blocked
Feb. 1913: Highway blocked
Feb. 1911: Highway blocked

NOTES:

8.5



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.5

MILE: 94.5

NAME: Superman's Climax

LOCATION: 4.5 mi (7.2 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,000-2,000 ft (900-600 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 3,000 ft (900 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 43°

Track: 34°

Runout zone: 6°

STARTING ZONE: Rock cliffs and numerous small gullies

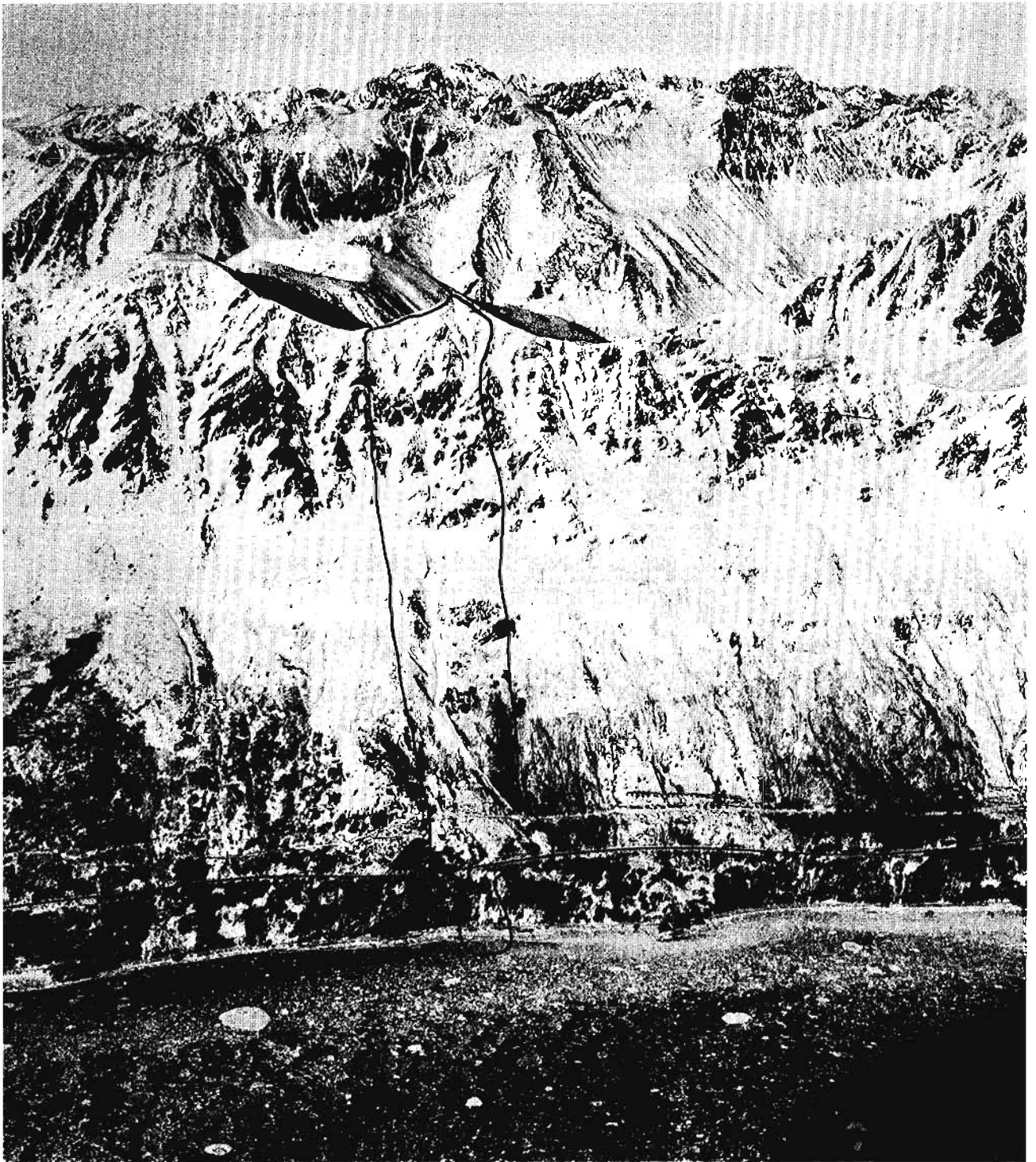
TRACK: Wide-open slope broken by rock cliffs, terraces, and gullies; deciduous vegetation ranges from low-lying shrubs to immature trees; lower track crosses highway; western end bordered by mature deciduous vegetation; eastern end bordered by mature deciduous and coniferous stands; earth mounds have been constructed above highway

RUNOUT ZONE: Railroad track and Turnagain Arm

HISTORY: Mar. 23, 1979: Highway blocked for 4 days
Jan. 22, 1978: Highway blocked
Feb. 20, 1962: Highway blocked
Apr. 21, 1960: Highway blocked (artillery)
Jan. 31, 1960: Highway blocked
Dec. 27, 1959: Highway blocked by two slides
Dec. 23, 1959: Highway blocked by four slides
Dec. 17, 1959: Highway blocked by four slides
Apr. 26, 1959: Highway blocked
Jan. 6, 1958: Highway blocked
Feb. 14, 1956: Highway blocked by three slides
Feb. 1913: Bird Hill trail (300 ft above present road) blocked
Feb. 1911: Bird Hill trail blocked

NOTES: Rusty van off road at extreme west end of path
Zone V in Alaska Dept. of Highways (1963)

6.6-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.6-1

MILE: 94.8

NAME: Cottonwood

LOCATION: 4.8 mi (7.6 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5168, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,000-2,000 ft (900-600 m)

Runout zone: 300-0 ft (90-0 m)

VERTICAL FALL: 3,000 ft (900 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 43°

Track: 28°

Runout zone: 30°

STARTING ZONE: Two gullies with small tributaries below rock bluffs

TRACK: Broad, open slope cut by two gullies that merge in midtrack; track crosses highway and continues down shrub-covered slope that is bordered by mature deciduous stands; earth mounds have been constructed above highway

RUNOUT ZONE: Railroad and Turnagain Arm

HISTORY: Mar. 23, 1979: Highway blocked for 4 days

Jan. 22, 1978: Highway blocked

Nov. 28, 1974: Highway blocked

Nov. 22, 1974: Highway blocked

Feb. 20, 1962: Highway partly blocked, railroad blocked

Feb. 18, 1960: Highway blocked

Jan. 31, 1960: Highway blocked by two slides

Dec. 27, 1959: Highway blocked

Dec. 21, 1959: Highway blocked

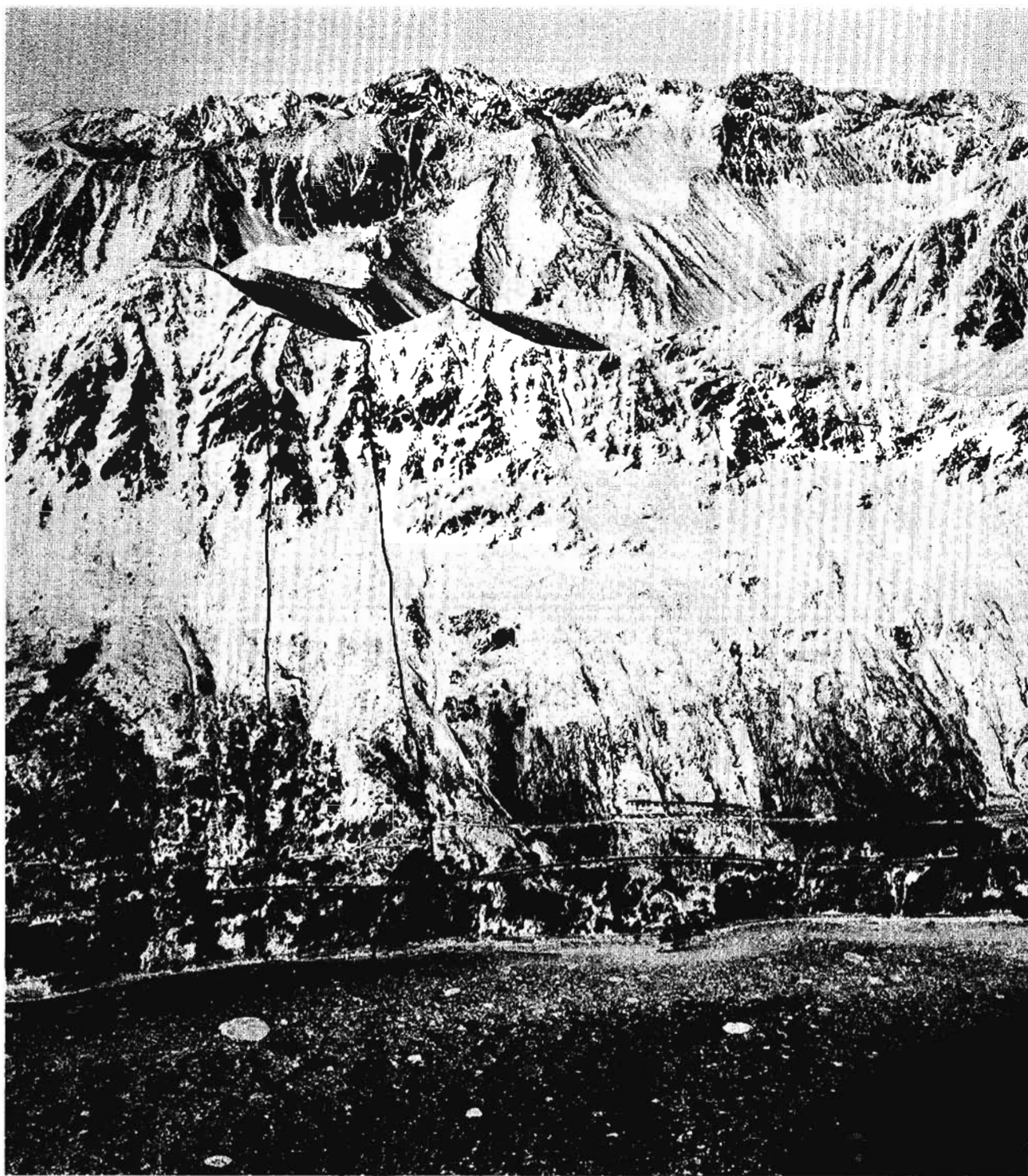
Dec. 17, 1959: Highway blocked

Feb. 1913: Bird Hill trail (300 ft above present highway) blocked

Feb. 1911: Bird Hill trail blocked

NOTES:

6.6-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.6-2

MILE: 95

NAME:

LOCATION: 5 mi (8 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,300-2,000 ft (1,000-600 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 3,300 ft (1,000 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 39° Track: 30° Runout zone: 16°

STARTING ZONE: Rock cliffs above main gully

TRACK: Open slope cut by shallow gully

RUNOUT ZONE: Divided by an immature deciduous stand above highway; extends below highway and is bordered by mature deciduous vegetation

HISTORY: Mar. 23, 1979: Highway blocked for 4 days

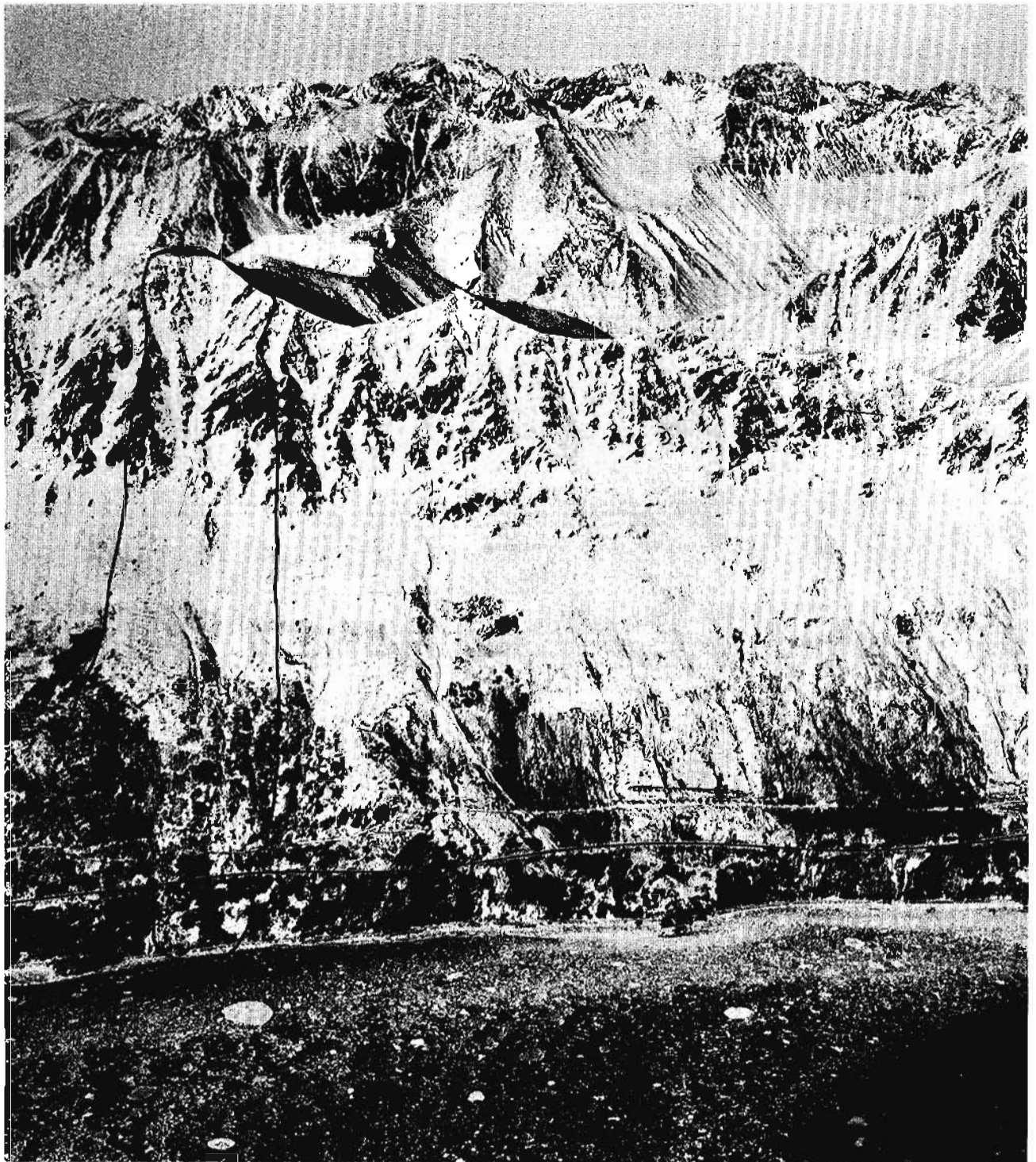
Jan. 22, 1978: Highway blocked

May 7, 1972: Two hunters caught and injured

Dec. 17, 1959: Highway blocked by two slides

NOTES:

6.6-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6,6-3

MILE: 95.2

NAME:

LOCATION: 5.2 mi (8.3 km) west of Girdwood junction

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6946, CIR, 1:65,000
USGS 1957 BMO221 R40 F5158, 5159, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,400-2,000 ft (1,040-600 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 3,400 ft (1,040 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 39°

Track: 28°

Runout zone: 21°

STARTING ZONE: Rock cliffs above gully

TRACK: Wide, open slope covered by low vegetation; track crosses highway; scattered deciduous trees in lower track

RUNOUT ZONE: Railroad and Turnagain Arm

HISTORY: Mar. 23, 1979: Slide blocked traffic 4 days

Jan. 22, 1978: Highway blocked

May 9, 1960: Highway blocked

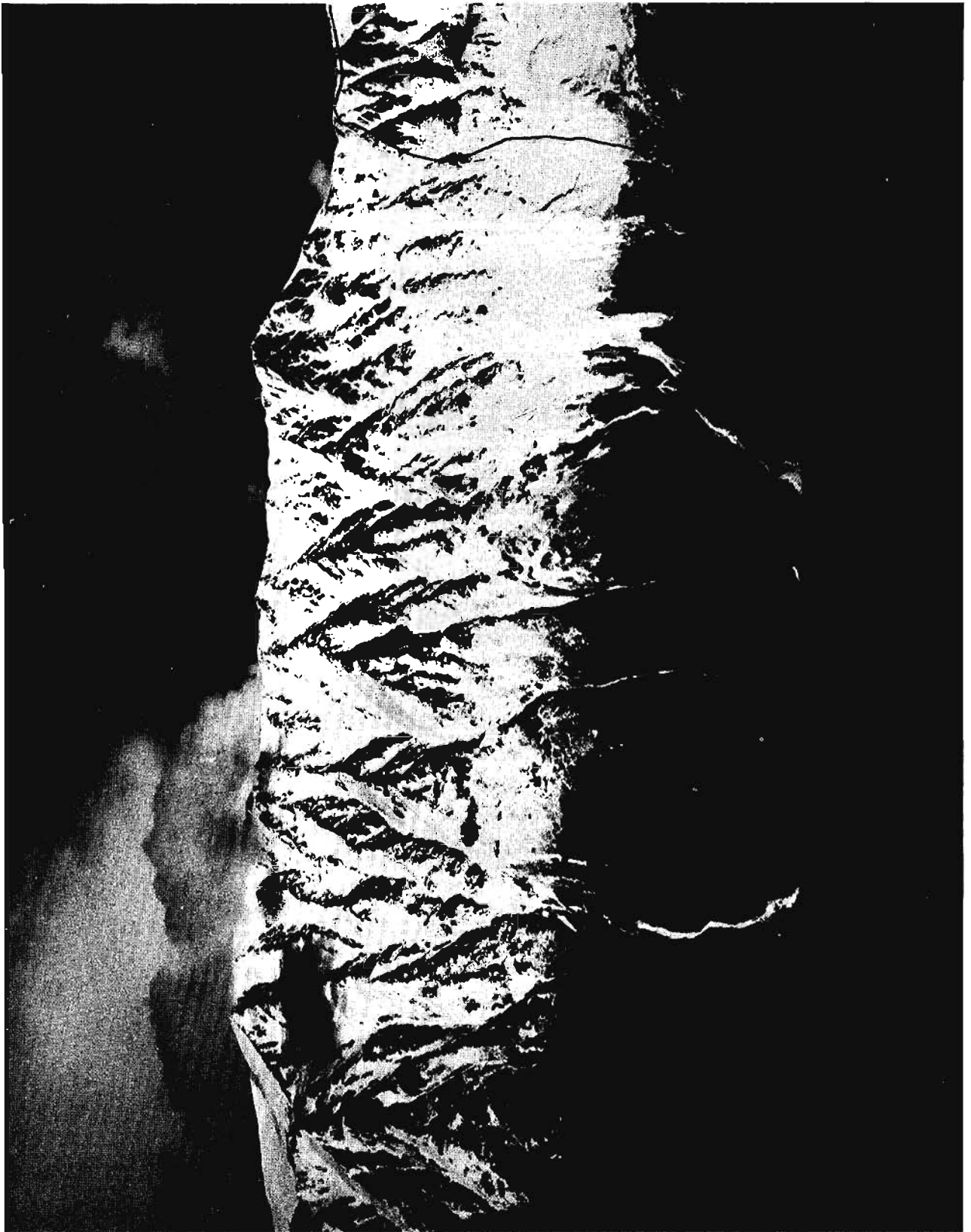
Dec. 17, 1959: Highway blocked

Feb. 1913: Bird Hill trail (300 ft above present highway) blocked

Feb. 1911: Bird Hill trail blocked

NOTES:

6.8-1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6,8-1

MILE: 97.6

NAME: Bird Flat No. 5

LOCATION: 3.6 mi (5.7 km) southeast of Bird Creek state campground

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6947, CIR, 1:65,000
USGS 1957 BMO221 R40 F5152, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-2,000 ft (1,160-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 3,800 ft (1,160 m)

STARTING-ZONE ASPECT: Southwest

INCLINE: Starting zone: 49°

Track: 28°

Runout zone: Level

STARTING ZONE: Rock cliff above series of gullies

TRACK: Broad, open slope; snow diverted at midtrack by rock shoulder covered with trees; scattered coniferous trees dot lower track

RUNOUT ZONE: Highway, railroad, and Turnagain Arm

HISTORY: Mar. 23, 1979: Highway blocked traffic for 4 days

Dec. 17, 1959: Highway blocked

Feb. 1913: Bird Hill trail (near present road alignment) blocked

Feb. 1911: Bird Hill trail blocked

NOTES:

6.8-2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.8-2

MILE: 97.7

NAME: Bird Flat No. 4

LOCATION: 3.5 mi (5.6 km) southeast of Bird Creek state campground

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6947, CIR, 1:65,000
USGS 1957 BMO221 R40 F5152, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-2,000 ft (1,160-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 3,800 ft (1,160 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 40°

Track: 28°

Runout zone: Level

STARTING ZONE: Several gullies and rock cliffs

TRACK: Broad, open slope cut by several gullies; western side is deep, sinuous gully

RUNOUT ZONE: Western gully is steep alluvial fan ending in swamp; remainder ends in low cliff band that drops into swamp

HISTORY: Mar. 23, 1979: Highway blocked for 4 days

Nov. 22, 1978: Highway blocked

Nov. 9, 1976: Highway and railroad blocked, powerlines damaged

Spring 1969: Gasline damaged

Apr. 9, 1959: Railroad and highway blocked

Dec. 17, 1959: Highway blocked

NOTES: Zone VIB of Alaska Dept. of Highways (1963)

6.8-3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.8-3

MILE: 98

NAME: Bird Flat No. 3

LOCATION: 2.9 mi (4.7 km) southeast of Bird Creek state campground

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6947, CIR, 1:65,000
USGS 1957 BMO221 R40 F5152, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,000 ft (1,220-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 4,000 ft (1,220 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 40°

Track: 32°

Runout zone: Level

STARTING ZONE: Two prominent gullies separated by rock rib

TRACK: Open slope cut by three gullies; two eastern gullies merge in midtrack; gullies separated by immature deciduous vegetation in lower track

RUNOUT ZONE: Begins at steep gravel slope with scattered low vegetation; crosses swamp and highway

HISTORY: Mar. 23, 1979: Highway blocked

Nov. 22, 1978: Highway blocked

Feb. 8, 1978: Highway blocked

Jan. 22, 1978: Highway blocked

Nov. 9, 1976: Highway blocked, powerlines damaged

Dec. 27, 1959: Highway blocked

Dec. 17, 1959: Highway blocked

Apr. 7, 1959: Highway blocked

Feb. 1913: Bird Hill trail (near present highway alignment) blocked

Feb. 1911: Bird Hill trail blocked

NOTES: Zone VIC of Alaska Dept. of Highways (1963)

6.8-4



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.8-4

MILE: 98.2

NAME: Bird Flat No. 2, Five Fingers

LOCATION: 2.7 mi (4.3 km) southeast of Bird Creek state campground

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6947, CIR, 1:65,000
USGS 1957 BMO221 R40 F5152, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,000-2,000 ft (1,220-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 4,000 ft (1,220 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 37°

Track: 28°

Runout zone: Level

STARTING ZONE: Sparsely vegetated rock cliffs with five gullies

TRACK: Open slope cut by two stream gullies that merge at midtrack; lower track bordered by mature coniferous vegetation

RUNOUT ZONE: Swamp and highway

HISTORY: Jan. 13, 1981: Highway blocked
Jan. 12, 1981: Highway blocked
Mar. 23, 1979: Highway blocked for 4 days
Nov. 22, 1978: Highway blocked
Nov. 9, 1976: Highway blocked, powerlines damaged
Apr. 8, 1959: Highway partially blocked
Apr. 7, 1959: Highway blocked
Dec. 27, 1959: Highway blocked
Dec. 17, 1959: Highway blocked
Feb. 1913: Bird Hill trail (near present highway alignment) blocked
Feb. 1911: Bird Hill trail blocked

NOTES: Zone VID of Alaska Dept. of Highways (1963)

6.8-5



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 6.8-5

MILE: 98.9

NAME: Bird Flat No. 1

LOCATION: 2 mi (3.2 km) southeast of Bird Creek state campground

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6947, CIR, 1:65,000
USGS 1957 BMO221 R40 F5152, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,500-2,000 ft (1,070-600 m)

Runout zone: 0 ft (0 m)

VERTICAL FALL: 3,500 ft (1,070 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 30°

Track: 32°

Runout zone: Level

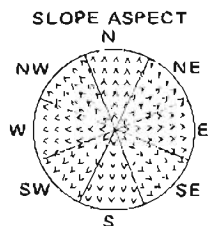
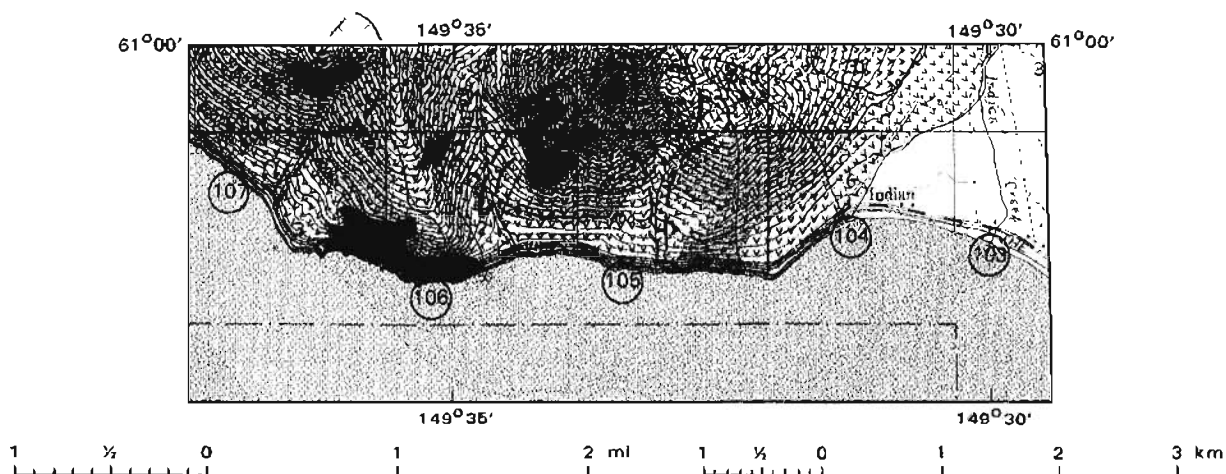
STARTING ZONE: Rock cliffs and small gullies with sparse vegetation

TRACK: Open slope cut by deep gully in upper track; lower track bordered by mature deciduous vegetation

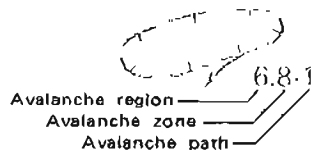
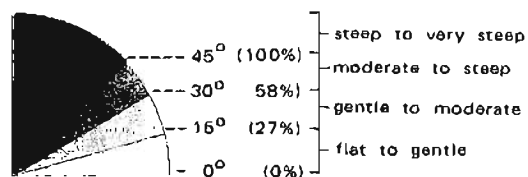
RUNOUT ZONE: Begins at cliff covered with immature deciduous vegetation; runout zone crosses swamp and reaches highway

HISTORY: Jan. 20, 1981: Highway blocked
Jan. 13, 1981: Highway blocked
Jan. 12, 1981: Highway blocked
Jan. 20, 1980: Highway blocked, one vehicle hit
Mar. 23, 1979: Highway blocked for 4 days
Jan. 22, 1978: Highway blocked
Feb. 8, 1978: Highway blocked, powerlines damaged, one car damaged
Nov. 9, 1976: Highway blocked, powerlines damaged
Apr. 8, 1959: Highway and railroad blocked
Dec. 21, 1959: Highway blocked
Dec. 20, 1959: Highway blocked
Dec. 17, 1959: Highway blocked
Feb. 1913: Bird Hill trail (near present highway alignment) blocked
Feb. 1911: Bird Hill trail blocked

NOTES: Zone VIF Alaska Dept. of Highways (1963)



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

(38) Road mileage

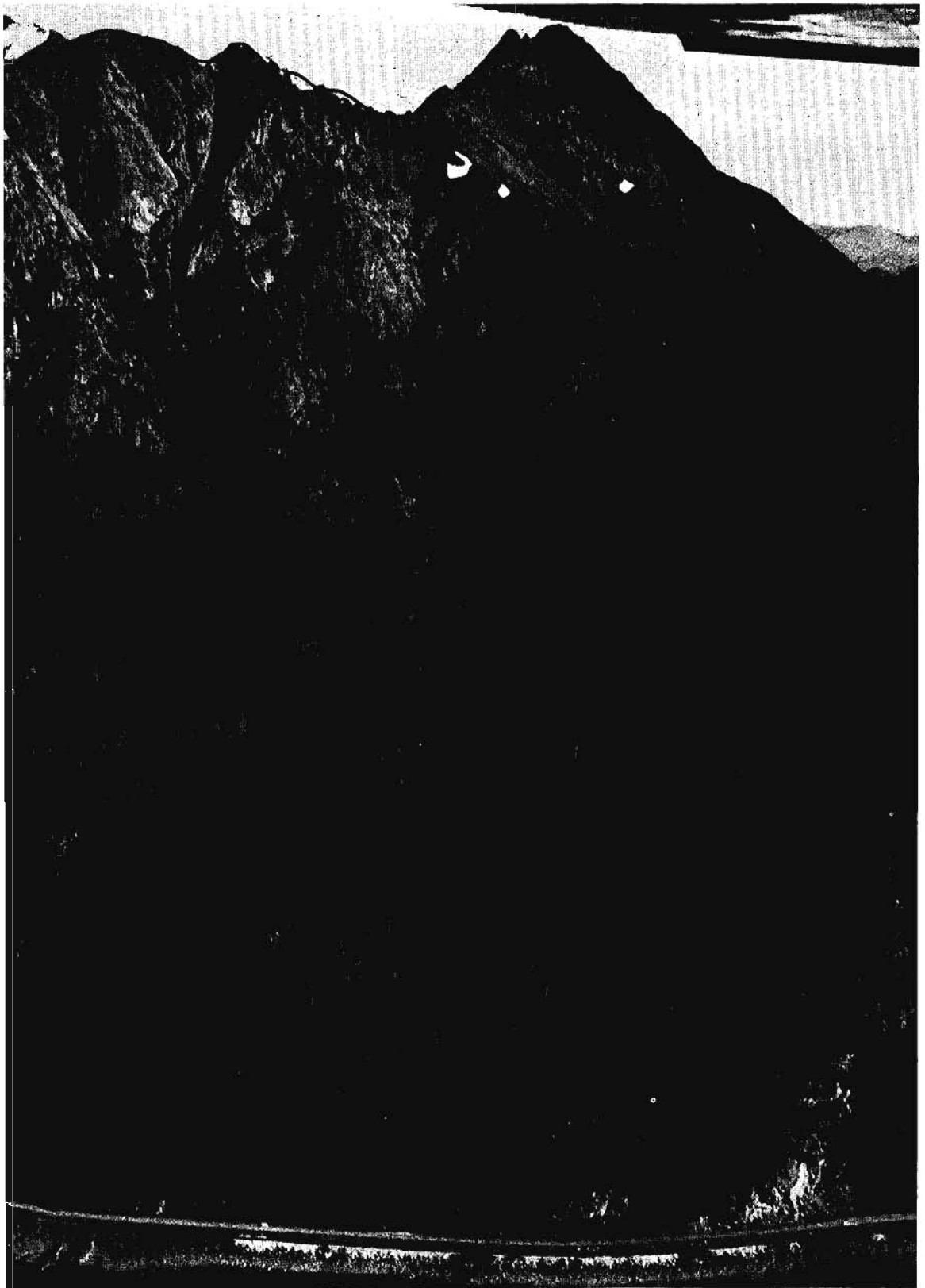
REGION 8

INDIAN TO ANCHORAGE

Mile 103 - 107

*Avalanche paths 8.1
through 8.3, Indian to
Anchorage*

8.1



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 8.1

MILE: 105

NAME: Grotto

LOCATION: 1.4 mi (2.2 km) west of Indian Creek

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6645, CIR, 1:65,000
USGS 1957 BMO221 R40 F5151, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,800-1,500 ft (1,160-460 m)

Runout zone: 500-0 ft (150-0 m)

VERTICAL FALL: 3,800 ft (1,160 m)

STARTING-ZONE ASPECT: South, southwest

INCLINE: Starting zone: 41°

Track: 25°

Runout zone: 25°

STARTING ZONE: Gullies and rock cliffs

TRACK: Open slope cut by three gullies that merge at midtrack; lower track bordered by scattered stands of mature deciduous trees

RUNOUT ZONE: Scattered stands of deciduous trees that border highway

HISTORY: Dec. 17, 1959: Highway blocked

NOTES:

8.2



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 8.2

MILE: 106

NAME: Falls Creek

LOCATION: 2.4 mi (3.8 km) west of Indian Creek

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6645, CIR, 1:65,000
USGS 1957, BMO221 R40 F5151, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,100-1,500 ft (950-460 m)

Runout zone: 500-300 ft (150-90 m)

VERTICAL FALL: 2,800 ft (850 m)

STARTING-ZONE ASPECT: Southwest, west

INCLINE: Starting zone: 37°

Track: 28°

Runout zone: 21°

STARTING ZONE: Wide gully below rock cliffs

TRACK: Open slope ending in stream gully that is bordered by mature deciduous vegetation

RUNOUT ZONE: Stream gully; downed trees in runout zone

HISTORY: Spring 1980: Mudslide

Mar. 21, 1979: Highway blocked

Dec. 17, 1959: Highway blocked

NOTES:

8.3



SEWARD HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 8.3

MILE: 107.5

NAME: Straight Shot

LOCATION: 3.9 mi (6.2 km) west of Indian Creek

MAP: Anchorage A-7, Seward D-7 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6645, CIR, 1:65,000
USGS 1957 BMO221 R40 F5151, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,400-1,200 ft (1,040-370 m)

Runout zone: 100-0 ft (30-0 m)

VERTICAL FALL: 3,400 ft (1,040 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 35°

Track: 30°

Runout zone: 11°

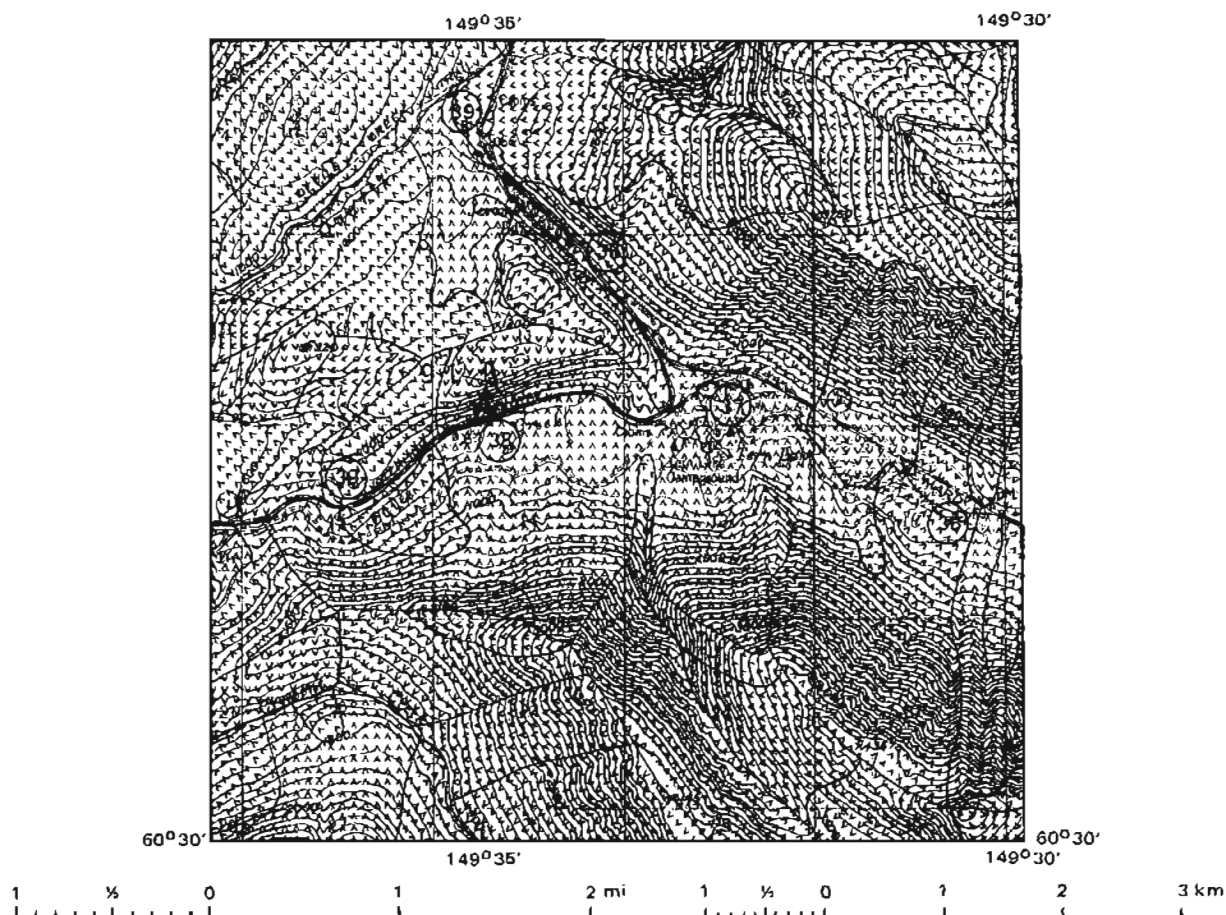
STARTING ZONE: Narrow bowl in rock cliffs

TRACK: Straight gully

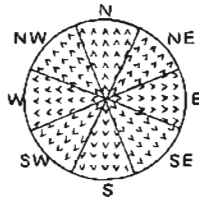
RUNOUT ZONE: Base of gully bordered by deciduous vegetation

HISTORY: Winter 1980: Slide ran to 50 ft above highway
Mar. 27, 1964: Earthquake-induced slide blocked highway
Feb. 1, 1960: Highway blocked
Dec. 17, 1959: Highway blocked

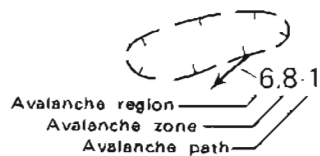
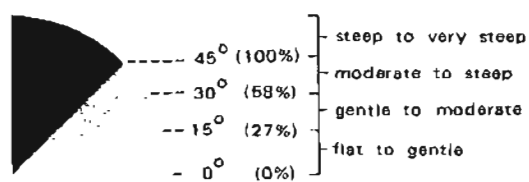
NOTES:



SLOPE ASPECT



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

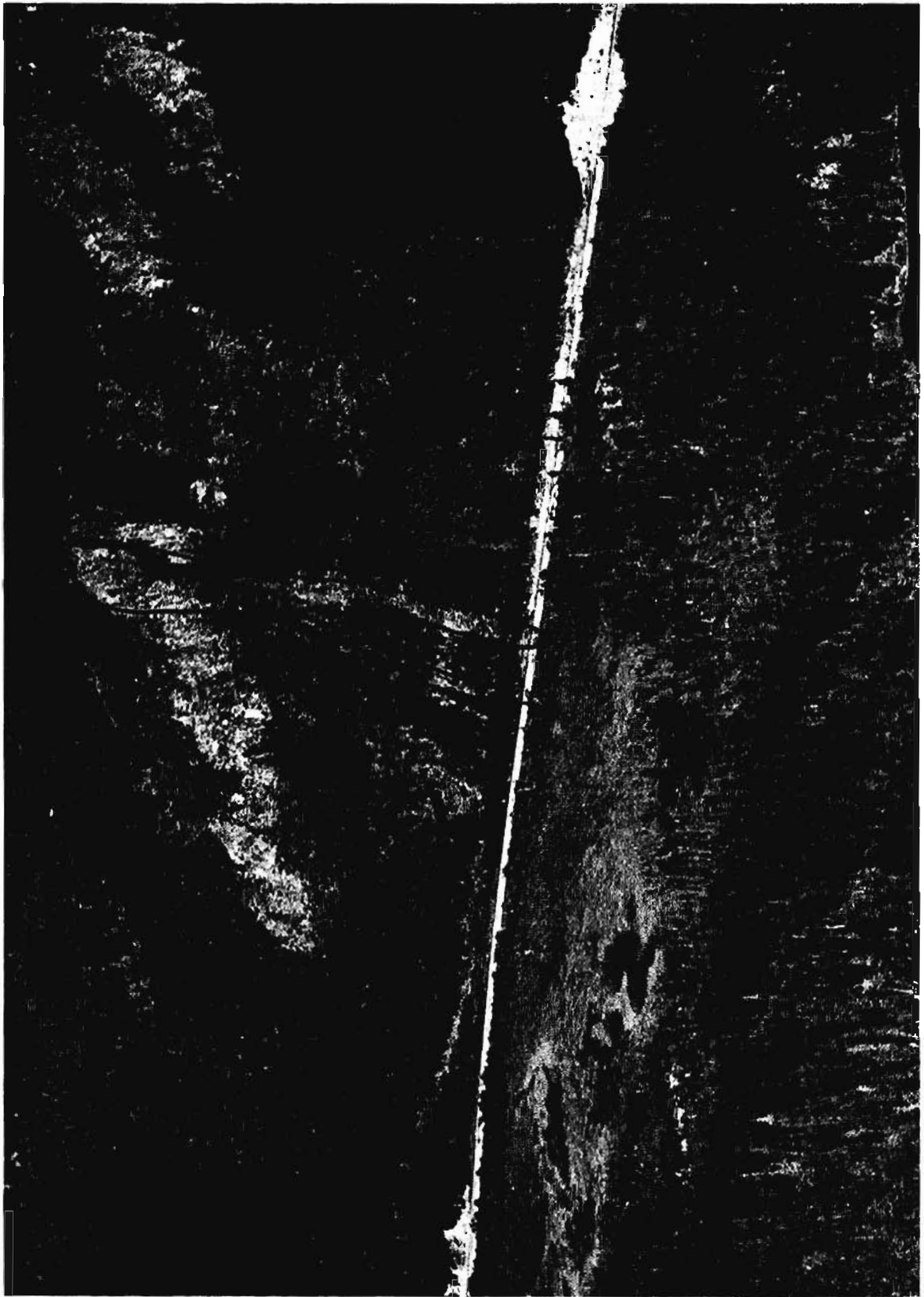
(38) Road mileage

REGION 9

STERLING HIGHWAY
Mile 37 - 48

*Avalanche path 9.1,
Sterling Highway*

9.1



STERLING HIGHWAY
AVALANCHE-PATH SUMMARY

NUMBER: 9.1

MILE: 38

NAME: Laurie's Lament

LOCATION: 0.5 ml (0.8 km) west of Tern Lake U.S. Forest Service Campground on Sterling Highway

MAP: Seward C-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6910, 6911, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 1,300-1,200 ft (400-370 m)

Runout zone: 600 ft (180 m)

VERTICAL FALL: 700 ft (210 m)

STARTING-ZONE ASPECT: South

INCLINE: Starting zone: 21° Track: 37°

Runout zone: Level

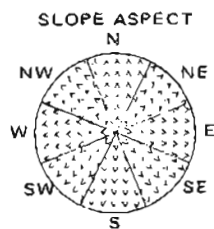
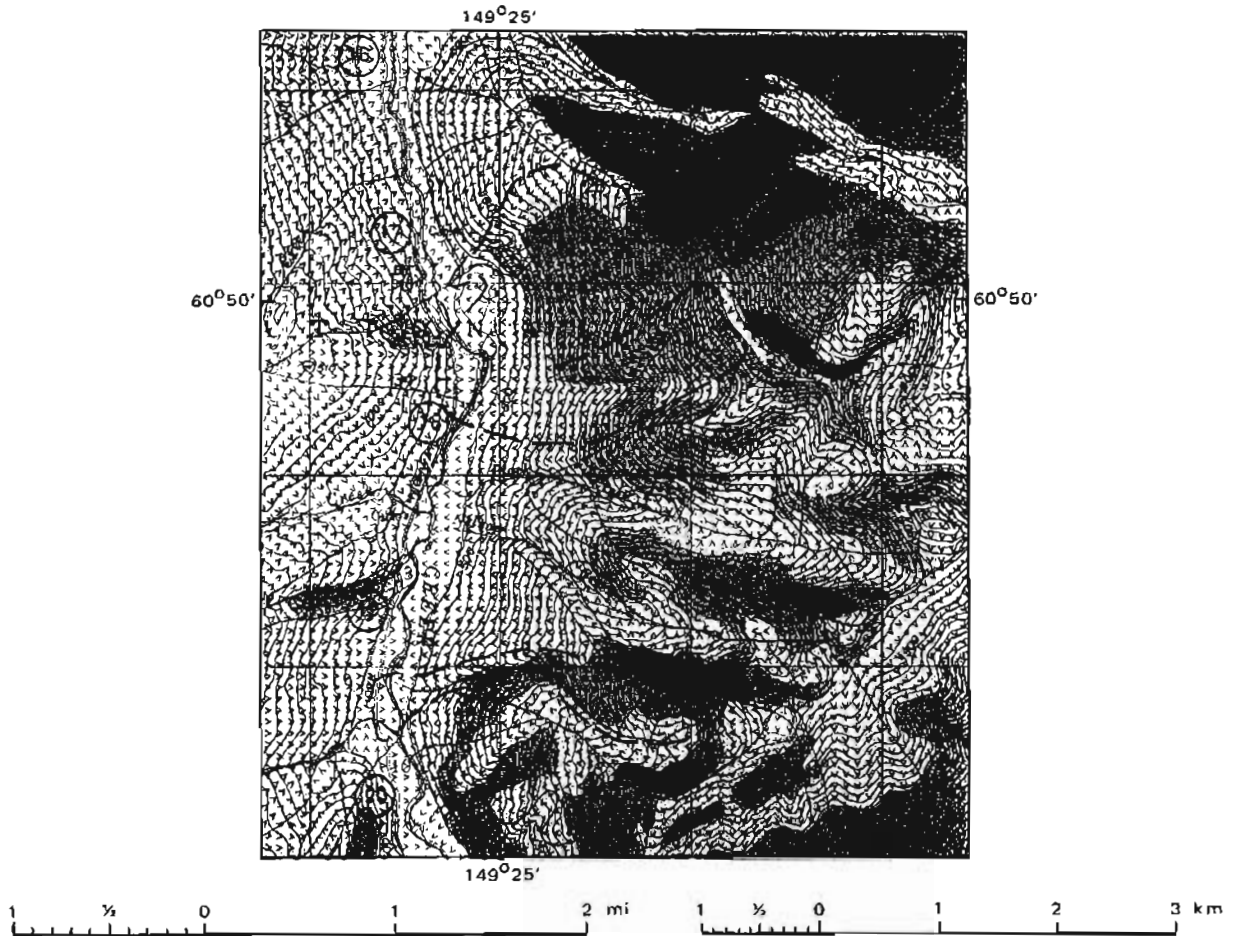
STARTING ZONE: Rock cliffs

TRACK: Open slope with mature deciduous trees; numerous downed trees in track

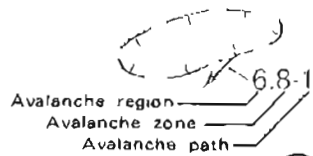
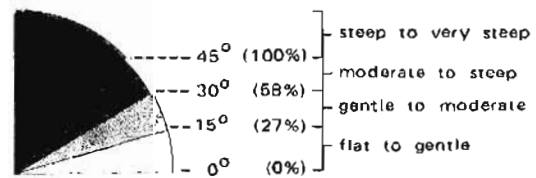
RUNOUT ZONE: Powerline and highway

HISTORY: Winter 1980: Slide hit highway

NOTES:



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

38 Road mileage

1
:
:
:
2

REGION 10

HOPE ROAD

*Avalanche paths 10.1-1,
10.2, Hope Road*

10.1-1



HOPE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 10,1-1

MILE: 18.5

NAME:

LOCATION: 1.5 mi (2.4 km) north of junction with Seward Highway

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 3,700-1,600 ft (1,130-490 m)

Runout zone: 500-350 ft (150-100 m)

VERTICAL FALL: 3,350 ft (1,020 m)

STARTING-ZONE ASPECT: West, southwest, south

INCLINE: Starting zone: 23° Track: 18° Runout zone: 5°

STARTING ZONE: Cirque below rock cliffs

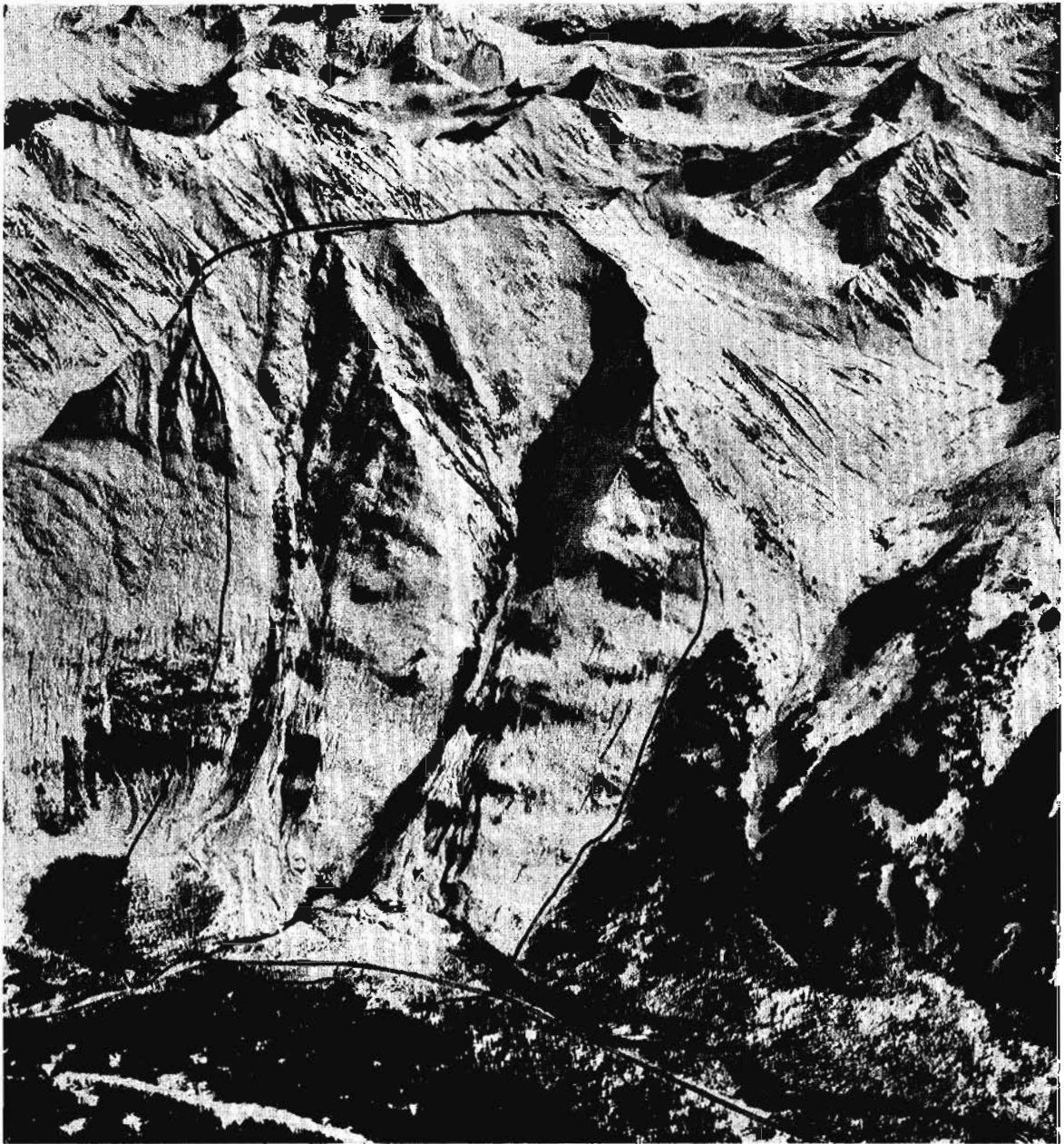
TRACK: Deep, sinuous gully

RUNOUT ZONE: Sixmile Creek and its flood plain

HISTORY:

NOTES:

10.2



HOPE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 10.2

MILE: 17

NAME: Boston Bar

LOCATION: 3 mi (4.8 km) north of junction with Seward Highway, on east side of Hope Road

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6658, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,200-1,700 ft (1,280-520 m)

Runout zone: 500-250 ft (150-75 m)

VERTICAL FALL: 3,950 ft (1,200 m)

STARTING-ZONE ASPECT: Southwest, south

INCLINE: Starting zone: 34° Track: 18° Runout zone: 7°

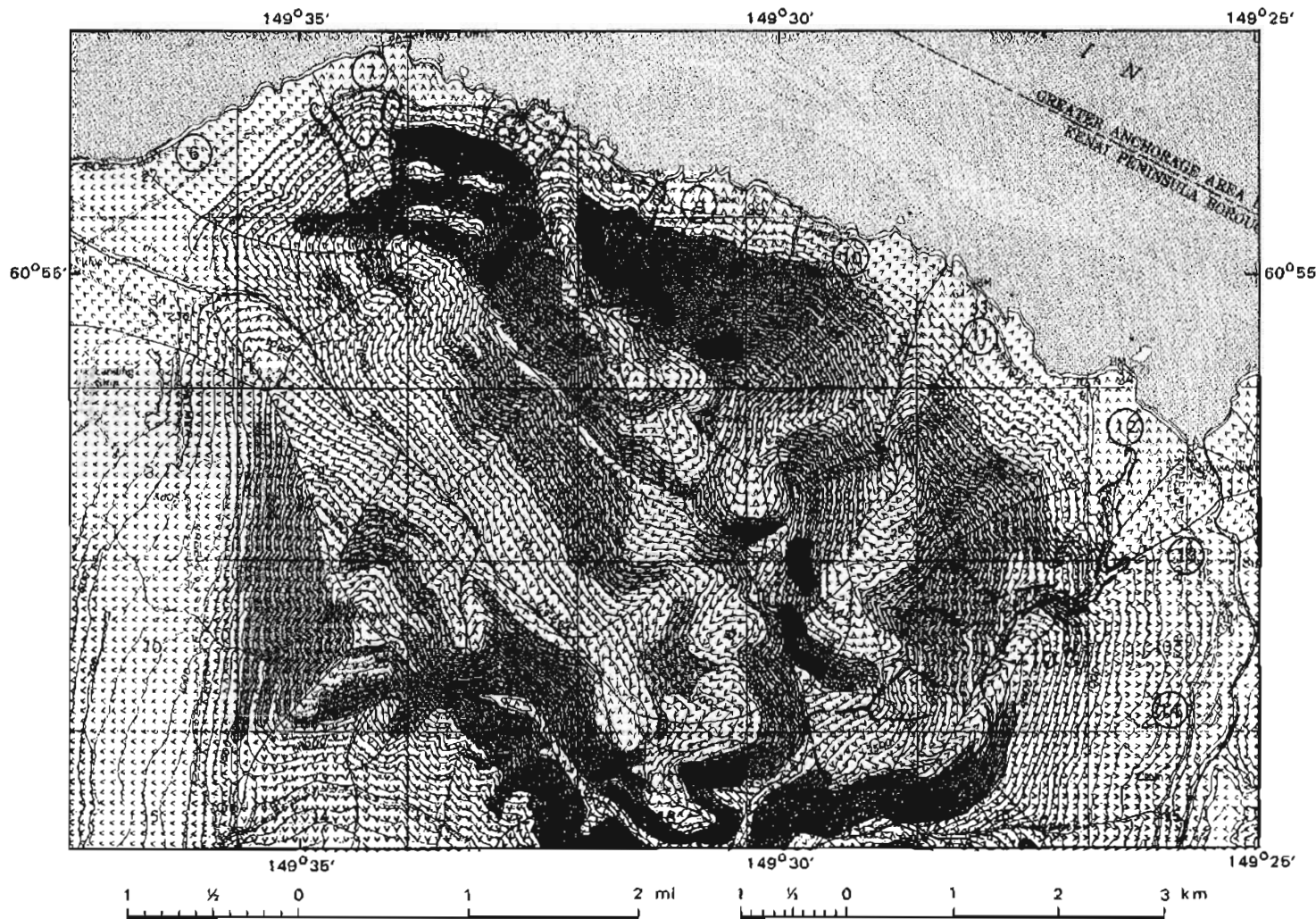
STARTING ZONE: Two wide bowls

TRACK: Open slope cut by two parallel gullies

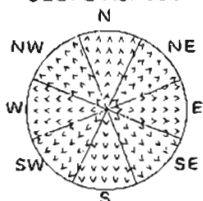
RUNOUT ZONE: Sixmile Creek, meadow, and road; airblast crosses road; downed trees on west side of road

HISTORY: Winter 1980: Slide blocked road, knocked down large trees on both sides of road
Apr. 1973: Road blocked, river flooded.

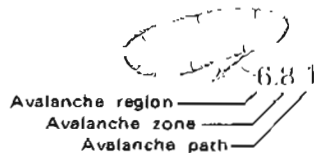
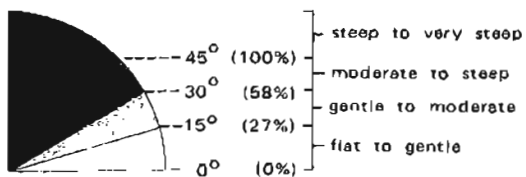
NOTES: 1981: Birch (cut): 78, 79, 72 yr



SLOPE ASPECT



SLOPE ANGLE (GRADIENT) - DESCRIPTION



Approximate boundary of avalanche zone or path - Arrow indicates very narrow path.

Identification number - Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

38 Road mileage

REGION 10

HOPE ROAD

(cont.)

*Avalanche paths 10.3
through 10.5, Hope
Road*

10.3

NO PHOTO AVAILABLE

HOPE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 10.3

MILE: 11

NAME: Sunrise Creek

LOCATION: 1 mi (1.6 km) north of Sunrise Creek, on south side of Hope Road

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6948, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 4,200-2,000 ft (1,280-610 m)

Runout zone: 900-100 ft (275-30 m)

VERTICAL FALL: 4,100 ft (1,250 m)

STARTING-ZONE ASPECT: East, southeast

INCLINE: Starting zone: 18°

Track: 28°

Runout zone: 19°

STARTING ZONE: Five bowls cut by gullies

TRACK: Stream gully bordered by mature coniferous stand

RUNOUT ZONE: Stream gully with narrow offshoots through mature spruce; occasionally hits road

HISTORY:

NOTES:

10.4

NO PHOTO AVAILABLE

HOPE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 10.4

MILE: 8.8

NAME:

LOCATION: 3.8 mi (6.0 km) east of junction with Palmer Creek Road

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6948, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,700-1,300 ft (820-400 m)

Runout zone: 200-0 ft (60-0 m)

VERTICAL FALL: 2,700 ft (820 m)

STARTING-ZONE ASPECT: North

INCLINE: Starting zone: 41° Track: 35° Runout zone: 11°

STARTING ZONE: Two narrow bowls

TRACK: Two open slopes that merge in lower track

RUNOUT ZONE: Crosses road and enters trees on north side

HISTORY:

NOTES:

10.5

NO PHOTO AVAILABLE

HOPE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 10.5

MILE: 7

NAME:

LOCATION: 2 mi (3.2 km) east of junction with Palmer Creek Road

MAP: Seward D-7 Quadrangle, Alaska (1951)

AERIAL PHOTOGRAPHS: NASA AMES Aug. 78 M02662 F6948, CIR, 1:65,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,200-1,400 ft (670-430 m)

Runout zone: 600-100 ft (180-30 m)

VERTICAL FALL: 2,100 ft (640 m)

STARTING-ZONE ASPECT: North, northwest

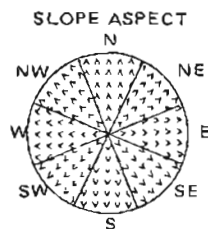
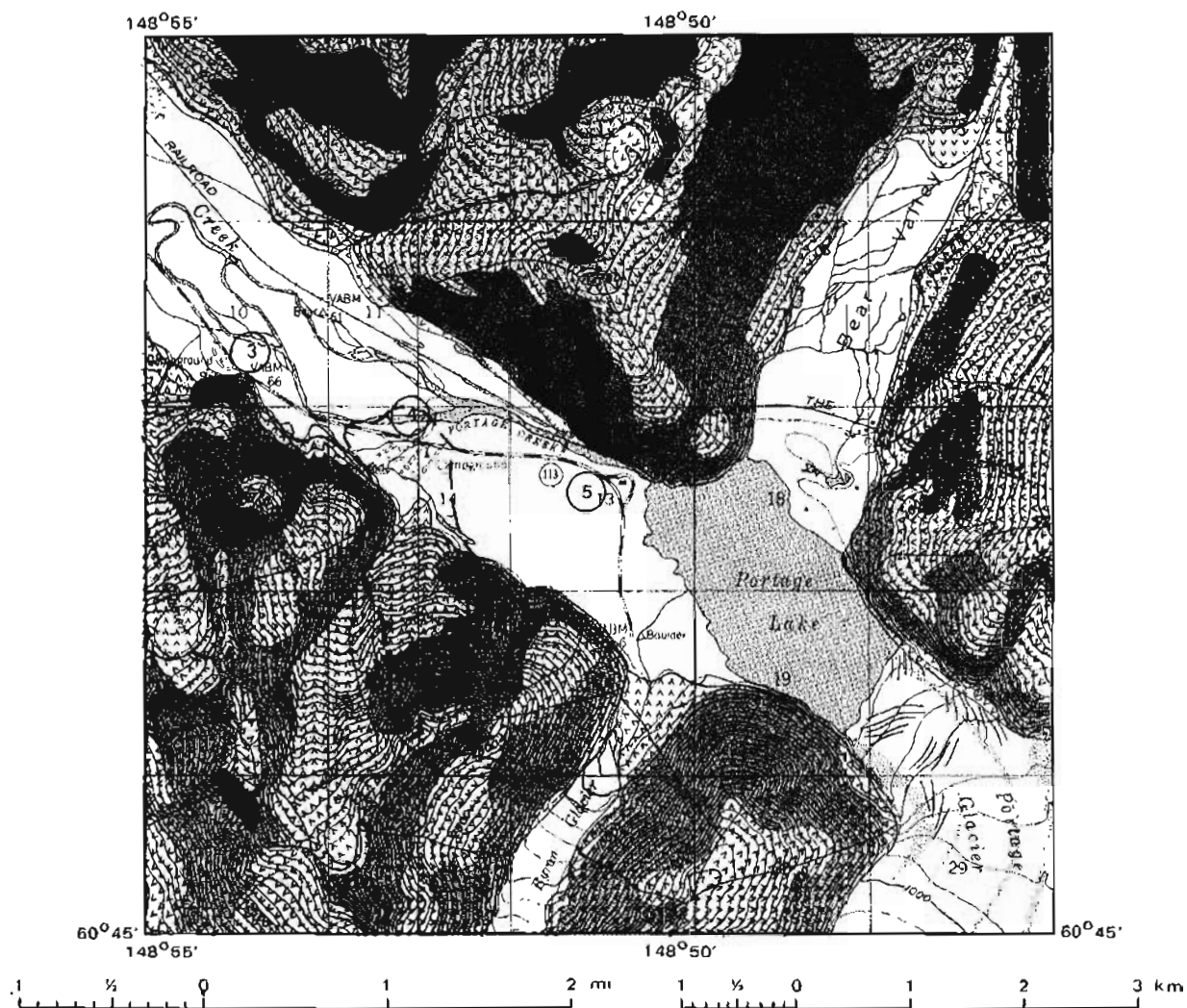
INCLINE: Starting zone: 33° Track: 27° Runout zone: 22°

STARTING ZONE: Open slope broken by terraces

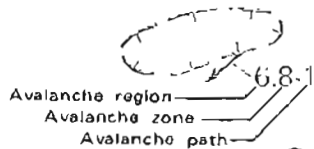
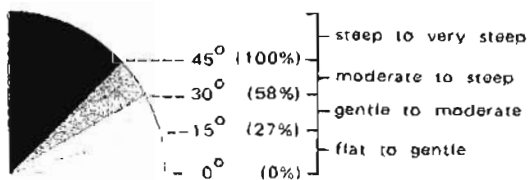
TRACK: Open slope in upper part; ridge divides lower portion in two

RUNOUT ZONE: Consists of two parts: a) eastern runout is fan extending to road; repeater tower on east border;
b) western runout is fan-shaped meadow extending to roadHISTORY: Feb. 7, 1980: Repeater site hit
Jan. 20, 1980: Road blocked

NOTES:



SLOPE ANGLE (GRADIENT) — DESCRIPTION



Approximate boundary of avalanche zone or path — Arrow indicates very narrow path.

Identification number — Where boundaries of adjacent paths are indistinct, identification number indicates approximate location of path within avalanche zone; region and zone numbers without marked boundaries indicate avalanche zones visible from but not known to affect highway.

38 Road mileage

REGION 11

PORTAGE ROAD

*Avalanche path 11.1,
Portage Road*

11.1



PORTAGE ROAD
AVALANCHE-PATH SUMMARY

NUMBER: 11.1

MILE: 4

NAME: Williwaw Campground

LOCATION: 4 mi (6.4 km) Portage Road at Williwaw Campground

MAP: Seward D-5, D-6 Quadrangles, Alaska (1951)

AERIAL PHOTOGRAPHS: -NASA AMES Aug. 78 M02662 F6662, CIR, 1:65,000
-USGS 1957 BMO216 R31 F4073, B+W, 1:60,000

DESCRIPTION:

ELEVATION (above sea level):

Starting zone: 2,800-1,400 ft (850-425 m)

Runout zone: 100 ft (30 m)

VERTICAL FALL: 2,600 ft (790 m)

STARTING-ZONE ASPECT: North

INCLINE: Starting zone: 28°

Track: 22°

Runout zone: Level

STARTING ZONE: Rocky, open bowl

TRACK: Steep, rocky, broken slope covered with immature deciduous vegetation

RUNOUT ZONE: Flat meadow below abrupt break in slope

HISTORY: Jan. 18, 1980: Williwaw Campground damaged, two moose killed, several hundred trees destroyed by
airblastNOTES: 1980: Cottonwood (cut): 41, 52, 54 yr
Recent glacier valley, trees are young

REFERENCES CITED

- Alaska Department of Highways, 1963, *Avalanche Study, Planning and Research Section: Douglas, Alaska*, 41 p.
- Alcan Avalanche Services, 1979, *Seward Highway avalanche safety plan; in collaboration with Alaska Department of Transportation and Public Facilities*, 98 p.
- Armstrong, B.R., and Armstrong, R.L., 1977, *Avalanche atlas, Ouray County, Colorado: Boulder, University of Colorado Institute of Arctic and Alpine Research, Occasional Paper 25*, 131 p.
- Burrows, C.J., and Burrows, V.L., 1976, *Procedures for the study of snow avalanche chronology using growth layers of woody plants: Boulder, University of Colorado Institute of Arctic and Alpine Research, Occasional Paper 23*, 54 p.
- Carrara, P.E., 1979, *The determination of snow avalanche frequency through tree-ring analysis and historical records at Ophir, Colorado: Geological Society of America Bulletin, part I, v. 90, p. 773-780.*
- LaChapelle, E.R., ed., 1974, *Cascade Passes avalanche atlas, Part I: Chinook, Cayuse, White and Snoqualmie Passes, Report to Washington State Highway Commission, Department of Highways: Seattle, University of Washington, Geophysics Program and Department of Civil Engineering*, 103 p.
- Mears, A.I., 1976, *Guidelines and methods for detailed snow avalanche hazard investigations in Colorado: Colorado Geological Survey Bulletin 38*, 125 p.
- Miller, Len, Armstrong, B.R., and Armstrong, R.L., 1976, *Avalanche atlas, San Juan County, Colorado: Boulder, University of Colorado Institute of Arctic and Alpine Research, Occasional Paper 17*, 60 p.
- Potter, Noel, Jr., 1969, *Tree-ring dating of snow avalanche tracks and the geomorphic activity of avalanches, northern Absaroka Mountains, Wyoming: Geological Society of America Special Paper 123*, p. 141-165.

PHOTO CREDITS

<u>Avalanche path</u>	<u>Page</u>	<u>Photo by</u>
1.1-1 thru 1.4	6-16	Hackett ¹
1.5-1, -2	18-20	Authors
2.1	24	No photo available
2.2	26	Hackett
2.3, 2.5-1	30-32	Authors
2.5, 2.6	34-36	Hackett
3.3	40	Authors
3.4	42	Hackett
3.5 thru 3.6-2	44-48	Authors
3.7	50	No photo available
3.8-1 thru 3	52-56	Hackett
4.1-1 thru 4.4	60-72	Authors
4.5-1	74	No photo available
4.5-2 thru 4.7-2	76-82	Authors
5.1-1 thru 5.3-4	86-102	DOT ²
5.4, 6.1	104-108	Authors
6.2-1 thru 6.6-3	110-126	DOT
6.8-1 thru 5	128-136	Hackett
8.1 thru 10.1-1	140-162	Authors
10.2	154	Mayo ³
10.3 thru 10.5	158-162	No photo available
11.1	166	Authors

¹Jim Hackett, USDA Forest Service, Anchorage, Alaska

²Alaska Department of Transportation and Public Facilities

³Larry Mayo, U.S. Geological Survey, Fairbanks, Alaska