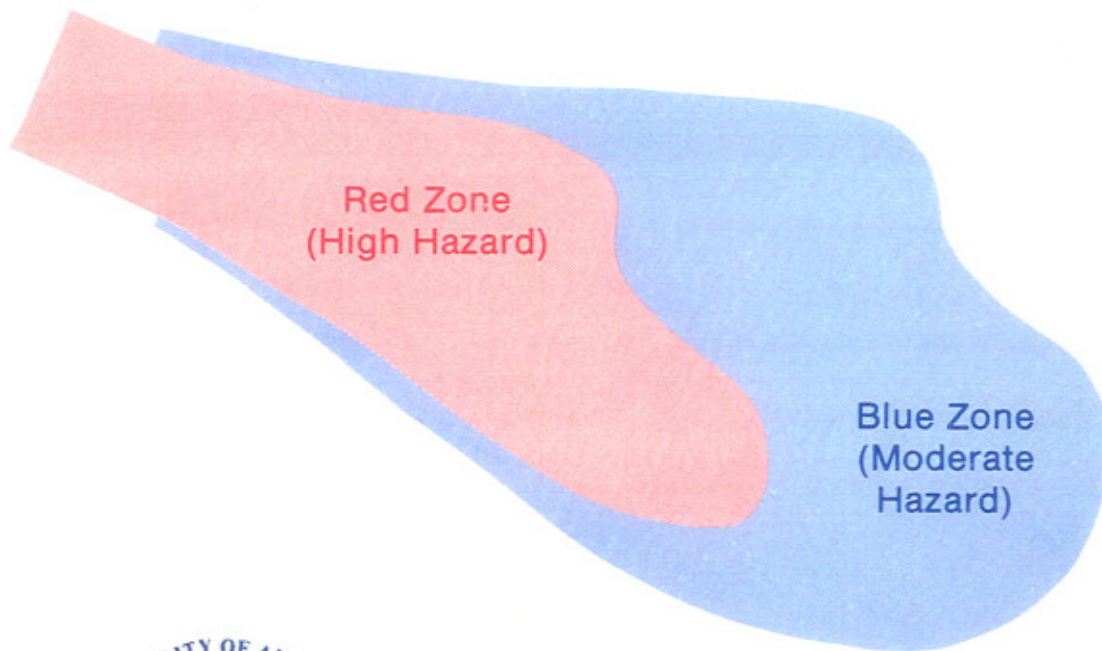


# ANCHORAGE SNOW AVALANCHE ZONING ANALYSIS

Prepared For

MUNICIPALITY OF ANCHORAGE



Arthur I. Mears, P.E., Inc  
Gunnison, Colorado  
September, 1982



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## INTRODUCTION

The Municipality of Anchorage extends into steep mountainous terrain subject to heavy rain and snow, high winds, and rapidly changing weather conditions. This combination of weather and terrain favors frequent and sometimes severe snow avalanching. During the past decade Anchorage population has more than doubled and an ever increasing number of residents have already settled within range of avalanches; an even larger number of people could be exposed if all privately-owned property were developed. This exposure increase has and will result in greater avalanche hazard to residents of the exposed areas.

Dramatic illustrations of the potential hazard were observed by many residents during the severe storms and major avalanches of March and April, 1979, and February, 1980 when many slides spread into areas unaffected during the preceeding 10 to 20 years. Several buildings were damaged, destroyed, or nearly hit by avalanches in Eagle River, major dry and wet-snow avalanches covered 1.9 miles of the Seward Highway as much as 50 feet deep in places between Bird Crèek and Girdwood, and many other large slides reached privately-owned but as yet undeveloped areas within the Municipality. Remarkably, no injuries resulted from these large avalanches, however the continued expansion into avalanche areas greatly increases the potential for future disaster.

The major avalanches of recent years introduced many residents to the destructive power of avalanches. Local terrain and snow conditions favor release of large snow masses that, in some places may exceed 100 or possibly 150 miles per hour before impacting the valley floor. Mature spruce and hemlock forests can be completely destroyed and unprotected structures are sometimes disintegrated and scattered over long distances. Some avalanches extend unexpectedly far across flat terrain. Unfortunately, the major events of most interest in planning have rarely been observed; the avalanches of 1979 and 1980 are only a small sample of what could occur given a long enough time period.

Because the potential for avalanche hazard within the Municipal boundaries is so great, the Municipality contracted this study which has the following objectives:

- to delineate the boundaries of "100-year" avalanches (defined in Section 1),
- to subdivide the identified avalanche areas into red (high hazard) and blue (moderate hazard) areas,
- to draw avalanche limits on the best available base maps,
- to provide a text describing the methods, assumptions, and findings of the study,
- to research the weather and snow conditions preceding major avalanches,
- to recommend methods by which avalanche hazards can be reduced structurally, and
- to suggest land-use regulatory controls in avalanche zones.

The report deals entirely with the rare avalanche events that result in land-use problems. No attempt has been made to address the important problems of avalanche hazard to backcountry users, ski areas, highways, and railroads. These problems are better solved by education of the public through avalanche courses, and through forecasting and control techniques. These objectives are beyond the scope of this study.