

COLORADO GEOLOGICAL SURVEY  
Open File Report

# GEOLOGY FOR LAND-USE PLANNING HORN PEAK QUADRANGLE CUSTER COUNTY, COLORADO

BY  
**JAMES N. PRICE**  
1977

## GENERAL DISCUSSION

According to Colorado House Bill 1041, a geologic hazard is defined as a natural process or event which, if not controlled, could result in a significant hazard to public health, safety, and property. It is obvious that geologic hazards would not exist if man's normal activities and presence in an area transferred many natural processes to the private land in the Horn Peak quadrangle area on the private land in the Horn Peak quadrangle area. Consequently, the primary objective of this study is to determine the geologic hazards which exist in the area and to provide information which will help in the planning and development of the area. It must be recognized that the geologic hazards which exist in the area are not new, but they are being recognized and studied for general land-use planning purposes and not as a means of determining the geologic hazards which exist in the area and to provide information which will help in the planning and development of the area.

**GEOLOGIC HISTORICAL DEVELOPMENT**  
The formation of the geologic features in the study area can be traced to events during the Pleistocene Epoch. At the close of the Pleistocene Epoch, the area was covered by a large ice sheet which advanced from the north and south. The ice sheet advanced from the north and south, and the area was covered by a large ice sheet which advanced from the north and south. The ice sheet advanced from the north and south, and the area was covered by a large ice sheet which advanced from the north and south. The ice sheet advanced from the north and south, and the area was covered by a large ice sheet which advanced from the north and south.

## GEOLOGIC FEATURES AND RELATED HAZARDS AND CONSTRAINTS

**Glacial Moraines and Related Glacial Deposits**  
The Glacial Moraines and Related Glacial Deposits were formed during the Pleistocene Epoch. These deposits include moraines, outwash plains, and alluvial fans. The moraines are composed of glacial till, and the outwash plains are composed of sand and gravel. The alluvial fans are composed of sand, silt, and clay. The moraines are located in the western part of the study area, and the outwash plains and alluvial fans are located in the eastern part of the study area.

**Recent Outwash Zones**  
Recent Outwash Zones are those areas of the Piedmont Alluvial Plain that have experienced significant erosion since the Pleistocene Epoch. These zones are characterized by a relatively high relief and are composed of sand, silt, and clay. The outwash zones are located in the eastern part of the study area, and they are a major source of sediment for the Piedmont Alluvial Plain.

**Landslides**  
Landslides result from the shearing failure and subsequent downslope movement of earth materials. Landslides occur in the study area, both of which originated on relatively steep slopes in glacial till. However, as indicated above, the landslides are not a major hazard in the study area.

**Stream Channel Instability**  
Stream channel instability is a potential hazard in the study area. It is caused by the erosion of stream banks and the deposition of sediment in the stream channel. Stream channel instability is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Encroachment**  
Stream channel encroachment is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel encroachment is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Obstruction**  
Stream channel obstruction is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel obstruction is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Avulsion**  
Stream channel avulsion is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel avulsion is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Migration**  
Stream channel migration is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel migration is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Incision**  
Stream channel incision is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel incision is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Widening**  
Stream channel widening is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel widening is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Shallowing**  
Stream channel shallowing is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel shallowing is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Deepening**  
Stream channel deepening is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel deepening is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

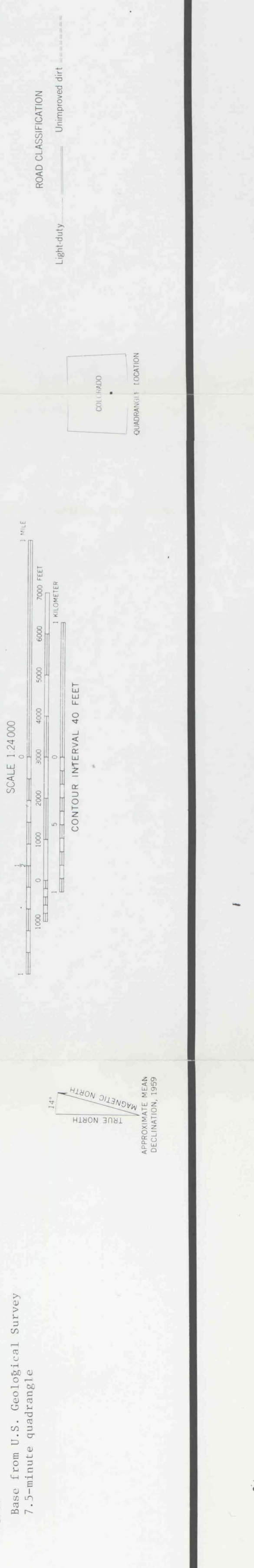
**Stream Channel Braiding**  
Stream channel braiding is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel braiding is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Anastomosing**  
Stream channel anastomosing is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel anastomosing is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Meandering**  
Stream channel meandering is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel meandering is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Point Bar Deposition**  
Stream channel point bar deposition is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel point bar deposition is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.

**Stream Channel Cut Bank Erosion**  
Stream channel cut bank erosion is a potential hazard in the study area. It is caused by the deposition of sediment in the stream channel and the narrowing of the stream channel. Stream channel cut bank erosion is a major hazard in the study area, and it is a major source of sediment for the Piedmont Alluvial Plain.



movement of the landslide material can be caused by... geologic processes by removal of vegetation, increase in the moisture content of the soil, or other factors. Therefore, nonconflicting land use such as agriculture, recreation, and other activities are proposed and are involving permanent human occupation on the study area. Geologic investigations to evaluate the feasibility for the proposed development.

**Unstable and Potentially Unstable Slopes**  
Unstable and Potentially Unstable Slopes include those relatively steep slopes that show evidence of either active or potential erosion. Failure of these slopes can be caused by a variety of factors, including the removal of vegetation, increase in the moisture content of the soil, or other factors. Therefore, nonconflicting land use such as agriculture, recreation, and other activities are proposed and are involving permanent human occupation on the study area. Geologic investigations to evaluate the feasibility for the proposed development.