

**DISCUSSION**

This slope map represents areas of the Parker quadrangle in which most of the slopes of the land surface fall within the stated limits of each category. Slope categories on the map are in percent slope; the chart below compares percent to various other means of expression of slope. Thus, a 5-percent slope corresponds to a 2°52' angle of inclination from the horizontal; to a 20:1 (20 to 1) slope ratio, which indicates a horizontal distance of 20 units for each unit of height; and to a gradient or a gain of about 265 feet in altitude for each mile of horizontal distance. Engineers and soil scientists commonly use percent slope, whereas many other geoscientists use the angle of inclination in degrees. Slope categories were chosen to coincide generally with optimum slope ranges for various types of urban installations and activities.

*Comparison of means of expressing slope*

Percent slope	Angle of inclination	Slope ratio	Gradient (feet per mile)
3	1°43'	33 1/3:1	153
5	2°52'	20:1	265
10	5°43'	10:1	530
15	8°32'	6 2/3:1	792
100	45°	1:1	5,280

*Commonly used optimum ranges of slopes for various urban installations and activities*  
[Modified from State Geological Survey of Kansas, 1971, p. 11]

**MAPPING CATEGORIES (PERCENT SLOPE)**

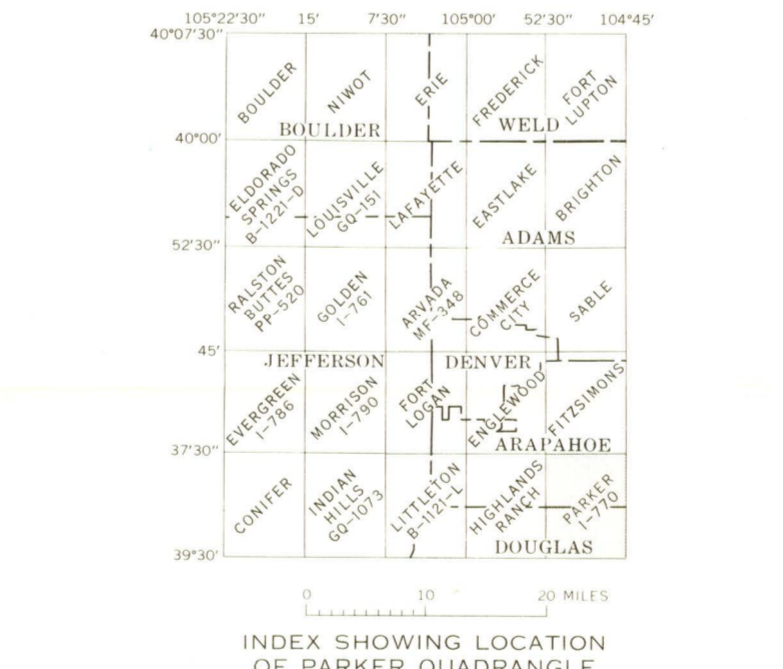
USES OR ACTIVITIES	MAPPING CATEGORIES (PERCENT SLOPE)				
	0-3	3-5	5-10	10-15	Greater than 15
General recreation areas	X	X	X	X	No obvious limit.
Engineered structures	X	X	X	X	X
General urban uses	X	X	X	X	X
All-weather urban roads	X	X	X		
Septic field systems	X	X			
Conventional housing	X	X	X	X	
Commercial centers	X	X			
Interstate highways	X	X			
Airports	X				
Railroads	X				
Tracked vehicle operations	X	X	X	X	To 45 percent.

Generally, slopes are steepest in the southwestern part of the map area, where bedrock is exposed at the surface. Slopes are progressively more gentle eastward and northward toward Cherry Creek, then are steeper on the northeastward rise from the valley of Cherry Creek.

Information about slopes is important in land-use planning. Activities of man, such as slope modification; selection of routes for transportation, utility lines, and communications; drainage and erosion control; landslide evaluation; and sewage disposal system design, depend in part on the "lay of the land" for which the planning is done.

The slope map is derived from what is shown by the topographic map at this scale; the philosophy of portrayal of the categories was to show areas where most of the slopes fall into the given category. Consequently, there are local areas where slope values do not coincide with the stated limits on the map. Some slopes will, with more extensive investigation, prove to be steeper than the limits of the map category shown for a particular area; some will be gentler. This map is designed solely as a general guide for land-use planning and is in no way meant to supplant necessary site investigations by a competent surveyor or engineer.

**REFERENCE**  
State Geological Survey of Kansas, 1971, A pilot study of land-use planning and environmental geology: Kansas Univ., Lawrence, Project No. KANS. P-43, Report No. 15-D, 63 p.



Base from U.S. Geological Survey, 1965  
Photorevised in 1972  
10,000-foot grid based on Colorado coordinate system, central zone  
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

SCALE 1:24,000

CONTOUR INTERVAL 10 FEET  
DATUM IS MEAN SEA LEVEL

COLORADO  
QUADRANGLE LOCATION

**SLOPE MAP OF THE PARKER QUADRANGLE, ARAPAHOE AND DOUGLAS COUNTIES, COLORADO**

By  
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1972