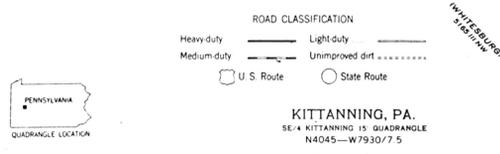
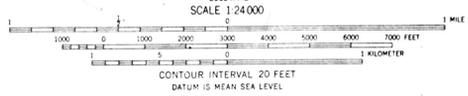




Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1958
Polyconic projection. 1927 North American datum
10,000-foot grid based on Pennsylvania coordinate system,
south zone
1000-meter Universal Transverse Mercator grid ticks,
zone 17, shown in blue



Contours in strip mine areas from 1952 photography

Landslides and related features interpreted
from aerial photographs:
1:40,000 (black and white) 1974

Photointerpretation and field check 1976
This map has not been edited or reviewed
for conformity with Geological Survey
standards and nomenclature.

ACTIVE OR RECENTLY ACTIVE LANDSLIDE
Complex landslide composed of earthflow, debris
slide, earth and rock slump. Identified from
historical records, and from scars, debris and
other field evidence. Ground extremely unstable;
sliding accelerated by excavation, loading and
changes in drainage conditions. May include
areas with several active slides too small to
be shown separately. Questioned where doubtful.

OLD LANDSLIDE
Area of extensive hummocky ground caused by
earthflow and earth and rock slump. Lacks
clear evidence of active sliding. Relatively
stable in natural, undisturbed state,
generally not affected by small structures properly
sited in areas away from the edge of the toes;
can be reactivated by extensive, rapid excava-
tion, loading, and changes in ground water and
surface water conditions. Area of old landslide
probably includes recent ones not identified
from field evidence or otherwise documented.
Upslope boundary of landslide generally defined
by modified scarp, but downslope (toe) may be
gradational and not well defined. Questioned
where doubtful.

COMBINATION LANDSLIDE
Area of recent and old slides in which
individual slides are not identified.

COLLUVIAL SLOPE
Valley wall along major streams with slope as
steep as 40° (85%); stony, clayey silt soil up
to 50 ft. (15 m) thick; commonly buttressed by
a terrace or bench at the toe of the slope; very
susceptible to sliding by cutting of toe area,
removal of terrace or bench, and overloading;
slide commonly activated without apparent cause.

SCREE
Residual accumulations of coarse rock material
lying on quartzite slopes of the Valley and
Ridge province. Generally stable except where
subjected to extreme rainfall.

LANDSLIDES AND RELATED FEATURES

OF THE KITTANNING, PA. QUADRANGLE

by
John S. Pomeroy
1979

U.S. Geological Survey

OPEN FILE MAP 79-1314 (G-4)

COLLUVIAL SLOPES WITH LANDSLIDES
Landslides too small or obscure to map
individually.

**AREAS SUSCEPTIBLE TO DEBRIS FLOWS AND DEBRIS
AVALANCHES**
Primarily shallow, narrow ravines and chutes with
accumulation of stony colluvium generally 10 ft.
(3 m) or less in thickness; susceptible to rapid
movement during intense rainfall. Most ravines
and chutes designated show evidence of former
debris flows and avalanches. Symbol & design-
ates historical debris flow or debris avalanche.

AREAS SUSCEPTIBLE TO ROCKFALL
Steep, locally vertical, natural and man-made
slopes and cliffs, 15 ft. (4.5 m) or more high;
formed dominantly of sandstone, limestone, sandy
shale, mudstone and claystone. Interbedded mud-
stone, claystone and shale weather rapidly leaving
sandstone and limestone rock faces unsupported.

SOIL AND ROCK SUSCEPTIBLE TO LANDSLIDING
Soil and rock similar to that involved in land-
slides elsewhere in map area; primarily areas
underlain by claystone, mudstone and shale
associated with other rock types. Rock weathers
rapidly on exposure forming clayey soil highly
susceptible to sliding. Includes coves (U-shaped,
shallow valleys) containing thick layers of clayey
soil that are very susceptible to sliding where
excavation breaks continuity of slope and where
overloaded by artificial fill.

AREAS LEAST PRONE TO LANDSLIDES
Map areas in which no patterns or symbols are shown;
primarily valley floors, ridge tops and broad
benches; modification by excavation and fill may
lead to local landslides.
Includes slopes where landslides are sparse.

The first five digits of the open file number designate
the specific 1:250,000 scale map sheet of which this quadrangle
is a part. The last two digits designate the position of the
quadrangle in a subdivision of the 1:250,000 scale map based
on rows and tiers shown in the diagram to the right. The
location of this quadrangle is shown by the black square.

NOTE
Information shown is intended as a
general guide to ground conditions as of
the date of field check. Additional
landslides and rockfalls should be anticipated
in all map units. The map unit depicts
the dominant condition in the area delineated
and variations in slope stability may occur
at any point in the unit. This map is suit-
able for general planning purposes and as a
supplement to more detailed studies for site
selection. The map cannot be used as a sub-
stitute for detailed geologic and engineering
investigations to establish design and
construction criteria of specific sites.
Some symbols may not appear on this map
because the description is applicable to a
series of maps.

MAN-MADE FEATURES
Strip mines (combination of letter symbols
indicates complex formed of more than one
type of strip mine)
sh bench with high wall (In Allegheny County
benches and furrows are shown by sh).
sf furrowed with high wall
sd multiple furrows and multiple benches
ss hilltop removed
srg reclaimed by grading
sru reclaimed by secondary use
sh/r regraded in part, high wall
remains
Coal refuse banks
r identified on aerial photographs;
not classified in field check
rb not burnt nor on fire
rbf burnt
rbd burning
rbs sludge
Quarries
q quarry site
qub spoil bank, quarry waste
Gravel pits
g site of gravel pit
Slides in man-made features
af earth flow in fill
a/s earth flow in strip castings
a/r earth flow in coal refuse

