

UNITED STATES GEOLOGICAL SURVEY  
OPEN FILE MAP 84-386  
Sheet 3 of 6

**GEOLOGIC OBSERVATIONS  
ALONG A PIPELINE TRENCH IN FREDERICK COUNTY, MARYLAND**  
by  
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In 1977 the Consolidated System laid a pipeline to carry liquid natural gas from Cove Point, Md., to south-central Pennsylvania via Masons Neck and Loudoun County, Va., and Frederick County, Md. Geologic observations were made along the trench for the pipeline in the summer of 1977 from the Monocacy River northward across Frederick County to the Maryland - Pennsylvania state line. Other portions of the line were not investigated because the pipe was laid and covered before observations could be made.

**Explanation**

The trench was 8 feet deep and the geologic profile is based on soil and rock exposed in the walls. In the vicinity of roads and railroads the trench was 4 to 12 feet deeper to permit boring under these features. In such areas only the upper 8 feet of the excavation are presented in the profile.

- Engineering Geology Features**
- Bedrock blasted and excavated by backhoe.
  - Weathered rock and soil with boulders excavated by backhoe; includes areas of loose, wet soil. Short areas of loose soil at curves excavated by backhoe are not differentiated in the profile.
  - Loose soil removed by continuous wheel excavator.

- Rock Types (code letters placed along top of profile)**
- db Diabase
  - ar Apophyllite and rhyolite tuff
  - ap Aplite dikes
  - gn Gneiss
  - mb Metabasalt (greenstone)
  - ph Phyllite
  - qz Quartzite
  - sc Schist
  - sp Serpentine
  - cn Conglomerate
  - ls Limestone and dolomite
  - sh Shale
  - ss Sandstone
  - bd Boulders
  - co Cobbles

**Geologic Structure**

F Fault

**Color codes (used only for sedimentary rocks)**

gy gray  
rd red

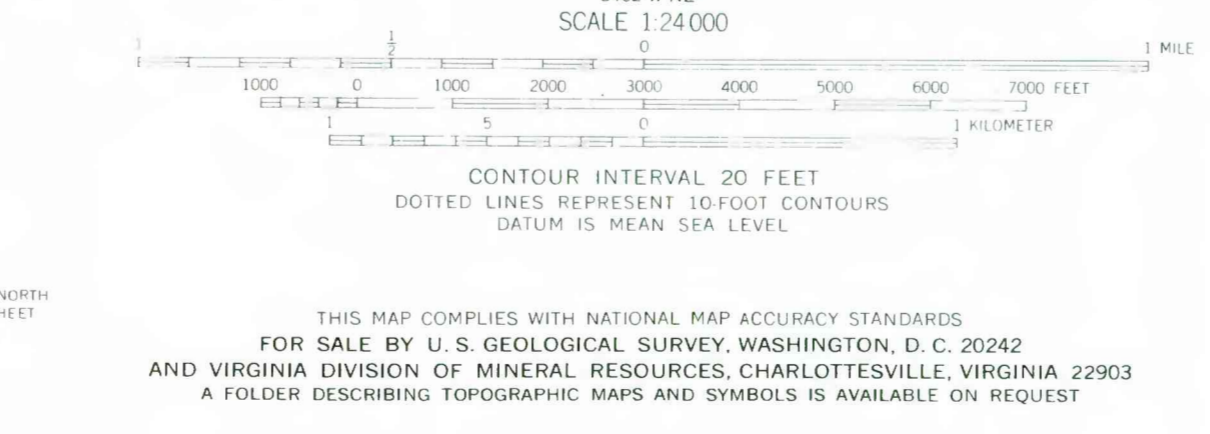
- Geologic Formations (code letters above rock type designations)**
- Quaternary**
- Qc Colluvium - boulders, cobbles and sand eroded from mountain slopes and deposited at the base of the slope and on adjacent valley floors.
- Triassic**
- Tn New Oxford formation - red shale and sandstone with limestone conglomerate; limestone conglomerate and sandstone generally require blasting.
- Cambrian-Ordovician**
- Co Conococheague limestone - argillaceous to siliceous limestone with some shale; requires extensive blasting of pinnacles.
- Cambrian**
- Ce Elbrook limestone - shaly limestone and calcareous shale; requires blasting of scattered, isolated pinnacles.
- Cf Frederick limestone - slabby limestone with shale partings; commonly excavated by backhoe.
- Cw Waynesboro formation - shale and siltstone with some dolomite in lower part; pinnacles of siltstone and dolomite require blasting.
- Cl Tomstown formation - crystalline limestone, dolomite and shale; few pinnacles of limestone and dolomite require blasting; otherwise rock is deeply weathered and excavated by wheel or backhoe.
- Ca Antietam formation - quartzitic sandstone with shale partings; generally buried beneath deposits of boulders and sand; where bedrock is encountered some blasting required but most can be excavated by backhoe.
- Ch Harpers formation - shale and phyllite, generally buried beneath deposits of boulders and sand; bedrock generally excavated by backhoe.
- Cw Weverton formation - quartzite and phyllite; normally requires extensive blasting but along pipeline only thin zones of weathered quartzite were encountered which were excavated by backhoe.
- Cl Loudoun formation - quartzite, tuffaceous slate and sandy phyllite; generally excavated by backhoe except for thin bands that require blasting.
- Precambrian**
- sm Catoclin formation - metabasalt (greenstone) and greenstone schist; blasting extensive in some areas of metabasalt.
- ar Apophyllite, rhyolite tuff interbedded in places with metabasalt; blasting generally required.
- mdg Gneiss complex - gneiss, schist and diorite; blasting common, especially in zones of gneiss.

**NOTE**

The data presented can be used for general planning purposes pertaining to shallow excavations. It cannot be used for specific site evaluation nor as a substitute for detailed geologic investigations for engineered structures. Physical characteristics of rock types and their weathering may vary throughout the area and changes should be anticipated close to the line of the profile.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Released in response to a Freedom of Information Act request.

Mapped, edited, and published by the Geological Survey in cooperation with Commonwealth of Virginia agencies  
Control by USGS and USCGS  
Topography by photogrammetric methods from aerial photographs taken 1965 and 1969. Field checked 1970  
Supersedes Army Map Service map dated 1956  
Polyconic projection - 1927 North American datum  
10,000-foot grids based on Maryland coordinate system, and Virginia coordinate system, north zone  
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue  
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked



**ROAD CLASSIFICATION**

- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U. S. Route
- State Route

POINT OF ROCKS, MD. - VA.  
N 3915 - W 7730 / 75  
1970  
AMS 5462 1 SE - SERIES V831