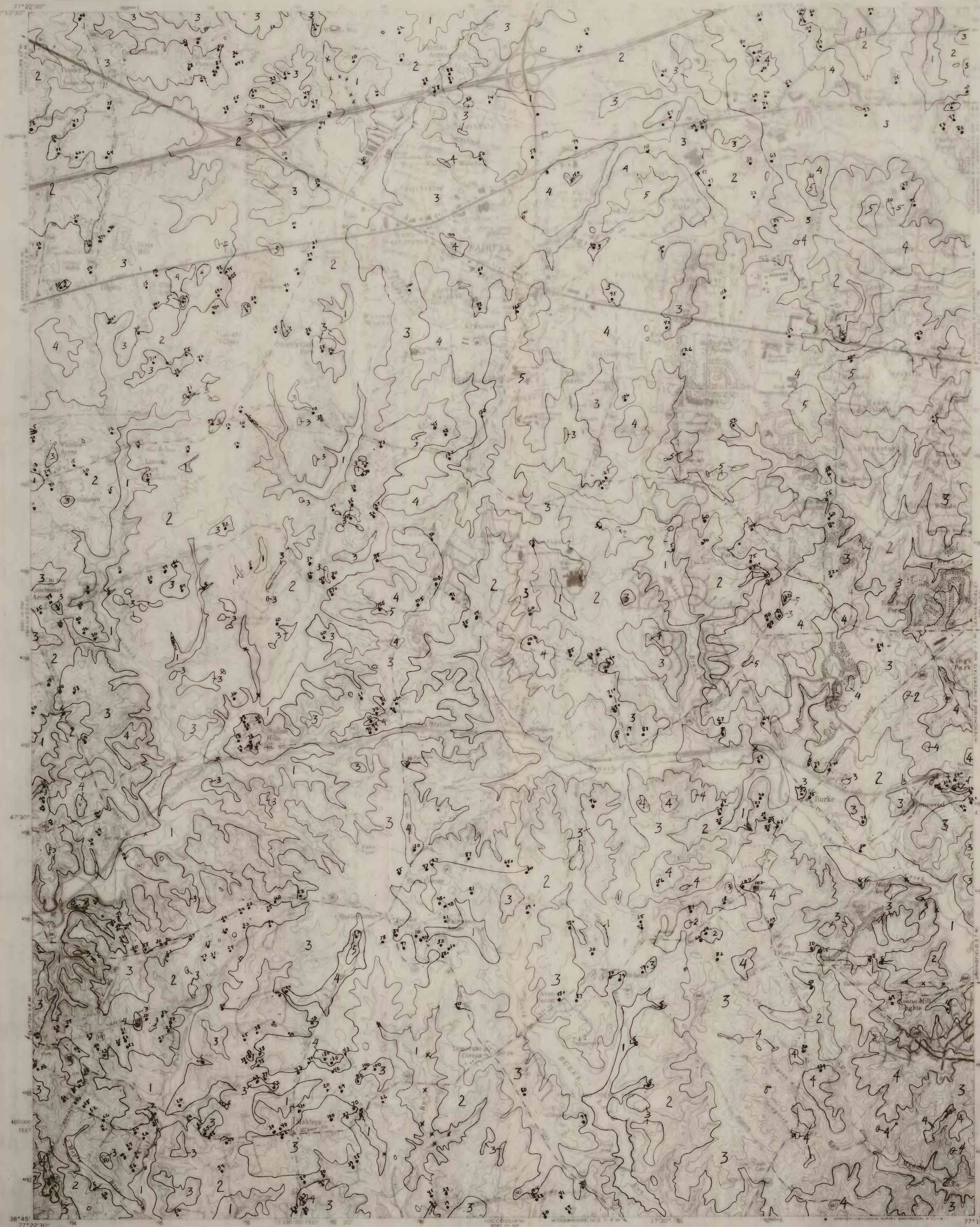
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Open File 76-612



Mapped, edited, and published by the Geological Survey

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Topography by photogrammetric methods from aerial photographs taken 1949. Field checked 1951. Revised from aerial photographs taken 1963. Field checked 1966

Polyconic projection. 1927 North American datum
10,000-foot grid based on 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 hedge lines where generally visible on aerial photographs. This information is unchecked

Red tint indicates areas in which only landmark buildings are shown

U. S. Geological Survey
OPEN FILE MAP 76-612
This map is preliminary and has not been edited for conformity with Geological Survey standards or nomenclature.

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

THICKNESS OF OVERBURDEN MAP, FAIRFAX QUADRANGLE, VIRGINIA

FAIRFAX, VA.
N3845—W7715/7.5

PHOTOREVISED 1971
AMS 5561 IV SE—SERIES V834

By A.E. Nelson
1976

Virginia (Fairfax quad) Surficial 1:24,000 1976 A
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Thickness of Overburden Map, Fairfax Quadrangle, Virginia

by

A. E. Nelson

Overburden designates all surficial earth materials resting on fresh bedrock. It includes soil, disturbed ground, artificial fill, alluvial flood plain deposits, stream terrace deposits, hillside colluvium and residual lag gravels, upland gravel, and saprolite derived from crystalline rocks. Overburden can generally be moved by power equipment, whereas bedrock generally requires ripping or blasting before removal.

Saprolite forms the thickest and most extensive overburden in the quadrangle; it is a soft, earthy, clay-rich material that formed in place by chemical weathering of crystalline rocks. The saprolite ranges from zero to more than 60 m (200 ft) thick in the quadrangle. The thickness depends upon its topographic position, parent rock lithology, and structure of underlying bedrock. Upland areas underlain mostly by schistose rocks contain the thickest saprolite deposits; areas underlain by granite, metasandstone, metasiltstone, and gabbro contain moderate thicknesses of saprolite; little or no saprolite overlies ultramafic rock or quartz veins. Stream valleys generally contain the least amounts of sarprolite, but may locally contain 20-30 feet of alluvium.

This map shows areas underlain by less than 10 feet, 10-50 feet, and increasing multiples of 50 feet overburden thickness and shows a broad picture of the general distribution of overburden thickness in the quadrangle. The areas of varying overburden thicknesses are based upon limited observations of approximate elevations between bedrock and overburden, the distribution of fresh bedrock exposures, and overburden thickness estimates from drillers logs of water wells on file at the Fairfax Co. Department of Health. Therefore, this map, which is compiled from a variety of data, is generalized. Since overburden thicknesses can vary widely within short distances, this map should not be used for detailed site investigation, which usually requires detailed surface and subsurface geologic data as well as geophysical studies.

Possible uses of the map: This map enables rapid evaluation of large areas for surface and subsurface construction. It can be useful in preparing cost estimates based upon volumes of material which can be moved by surface power equipment in contrast to that requiring ripping or blasting before removal. When used in conjunction with a bedrock map, areas containing thin overburden over desirable rock types may be delineated for potential quarry sites.

Thin overburden areas are commonly favorable sites for heavy construction requiring strong bedrock for maximum structural support. However, the same areas would require extensive design modification for sanitary landfill sites, utility lines and highway construction. Poorly drained clay-rich soil and thin saprolite on mafic rocks and metasiltstone may pose problems for septic tank leaching fields.

Areas with thick overburden are favorable for deep burial of utility lines and pipelines. Well drained silty and sandy loam on thick saprolite overlying schistose rocks for example, may be well suited for septic tank or industrial waste drainfields. Thick saprolite underlying relatively steep slopes is relatively less stable and more readily eroded than similar slopes underlain by bedrock.

Used with the base of saprolite map (open-file map 76-621) and other relevant maps and tables, this map may aid in understanding subsurface fluid behavior.

EXPLANATION

Thickness of Overburden, in feet below land surface

5	Greater than 150
4	100 - 150
3	50 - 100
2	10 - 50
1	Less than 10 (Fresh bedrock common)

Data control point

X	Bedrock outcrop; generally fresh, not all outcrops shown.
● 62	Drill hole, approximately located; number indicates thickness in feet of overburden estimated from drillers logs or inferred from length of casing in water wells.
	Spring, commonly near or at contact of overburden and bedrock.

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