New York State Museum
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New York State Geological Survey
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BEDROCK TOPOGRAPHY OF ALLEGANY COUNTY, NEW YORK

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Introduction

Beginning in 2019, under the guidance and funding provided by the United States Geological Survey - Great Lakes Geological Mapping Coalition (award G20AC00401), the New York State Museum - Geological Survey began a statewide effort to conduct geologic mapping of bedrock elevations throughout New York. Allegany County, of Western New York, is within the Allegany Plateau physiographic province. The county is bounded by Cattaraugus, Wyoming, Livingston and Steuben Counties from west to east in New York and McLean and Potter in Pennsylvania. Surficial and subsurface bedrock point data and maps were compiled from publicly available sources, vetted, and organized into a comprehensive geospatial database. A technical workflow was developed to categorize the overall geology and differentiate between the underlying bedrock and overlying unconsolidated sediments. The resulting bedrock elevation map provides a detailed representation of bedrock topography across Allegany County. This map is useful for various applications, including geological studies, engineering and construction, natural resource management (such as water or mineral resources), and environmental studies.

Methodology

A total of 2,360 bedrock control points were used to delineate bedrock topography in Allegany County. These points consisted of 2,094 water wells, 52 engineering boreholes, and 36 waterfall locations. These data were compiled from a variety of public sources and imported into ESRI's ArcMap 10.8 software platform. Ground surface elevations for all control points were extracted from a compilation of three separate digital elevation models (DEM) which were resampled to match a 1-meter LIDAR DEM cell size. Bedrock elevations were calculated at each location by subtracting the depth-to-bedrock from the ground surface elevation. 50-foot bedrock elevation contours were auto-generated and manually refined through a multi-step quality control process to resolve any interpolation errors. The finalized contours were converted into a 1-meter raster, using the "Topo to Raster" tool, that represents county-wide bedrock topography.

Summary

The New York State Museum – Geological Survey has developed a detailed Bedrock Topography Map for Allegany County. This map represents a compilation of various surficial and subsurface bedrock data sources, analytical methods, and quality control procedures. The resulting bedrock elevations reveal a range of distinct geological features including a variety of Paleozoic bedrock erosional profiles, and evidence of past glaciation. These characteristics are likely the result of a variety of functions including bedrock stratigraphy, structural deformation, and erosional processes such as past glaciation and fluvial geomorphology. This map is significant for applications in geological research, engineering, natural resource management, and environmental studies. Continued research and work on subsurface geology will provide additional data and insight and enhance the geologic framework of bedrock geology throughout New York State.

Wyoming
Livingston
Cattaraugus
Steuben
McKean
Potter

78.313° W · 78.250° W · 78.188° W · 78.125° W · 78.063° W · 78° W · 77.938° W · 77.875° W · 77.813° W · 77.750° W · 77.688° W

42.500° N · 42.438° N · 42.375° N · 42.313° N · 42.250° N · 42.188° N · 42.125° N · 42.063° N · 42° N

SCALE1:100,000

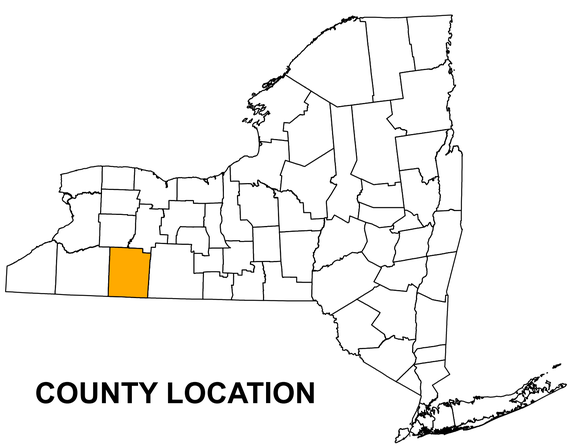
Explanation

- Data Point
- 50ft Bedrock Elevation Contour
- 100ft Bedrock Elevation Contour
- Highway
- Allegany County Line
- Adjacent County
- New York State Line

Bedrock Topography

Feet-amsl

- 650 - 750
- 750 - 850
- 850 - 950
- 950 - 1,050
- 1,050 - 1,150
- 1,150 - 1,250
- 1,250 - 1,350
- 1,350 - 1,450
- 1,450 - 1,550
- 1,550 - 1,650
- 1,650 - 1,750
- 1,750 - 1,850
- 1,850 - 1,950
- 1,950 - 2,050
- 2,050 - 2,150
- 2,150 - 2,250
- 2,250 - 2,350
- 2,350 - 2,450
- 2,450 - 2,550



COUNTY LOCATION

Digital Data and Cartography by J. Rogerson, A. Blake, R.Frieman, H. Forgeng and K. Backhaus, 2022-24

Universal Transverse Mercator, Zone 18 N North American Datum of 1983

Geographic and hydrograpghy data obtained from the NYSGIS Clearinghouse (https://gis.ny.gov/)

Kilometers 0 2.5 5 10 15 20
Meters 0 10,000 20,000
Miles 0 1 2 4 6 8
Feet 0 6,250 12,500 25,000 37,500 50,000

NOTICE

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