

DRIFT THICKNESS OF LIVINGSTON 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. Livingston County, of Western New York, is within the Allegheny Plateau physiographic province. The county is nestled between Wyoming, and Ontario counties. Livingston County is also located along two large bodies of water, Lake Ontario and Oneida Lake. 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 Livingston 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 1,063 bedrock control points were used to delineate bedrock topography in Livingston County. These points consisted of 947 water wells, 77 waterfall locations, 25 oil and gas wells, and 14 engineering boreholes. 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. Lastly, the "Raster Calculator" tool is used to subtract the surface elevation from the bedrock elevation to determine the thickness of the drift in the county.

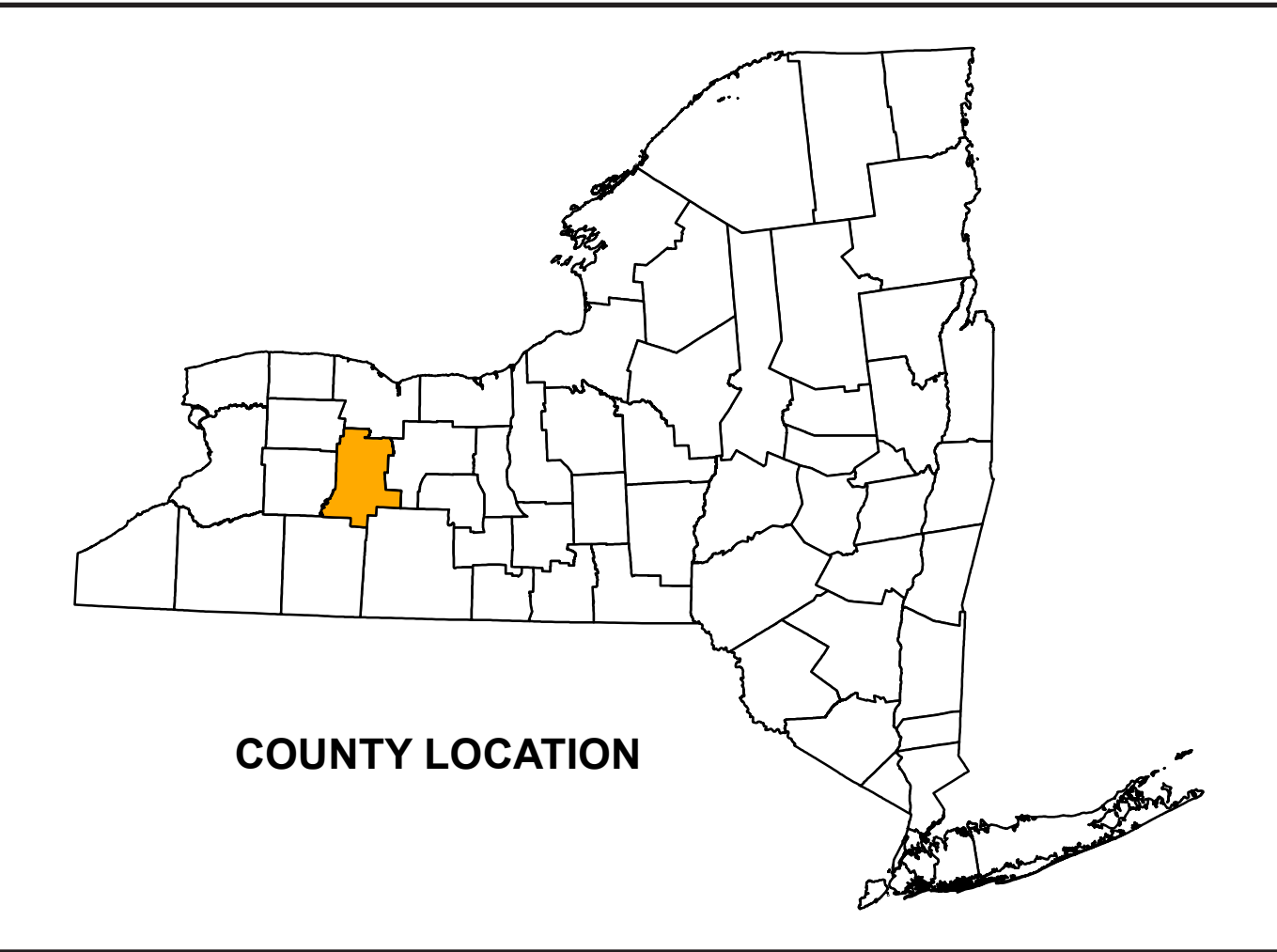
Explanation

- Data Point
- 50ft Drift Thickness Contour
- 100ft Drift Thickness Contour
- Highway
- Livingston County Line
- Adjacent County
- Water Body

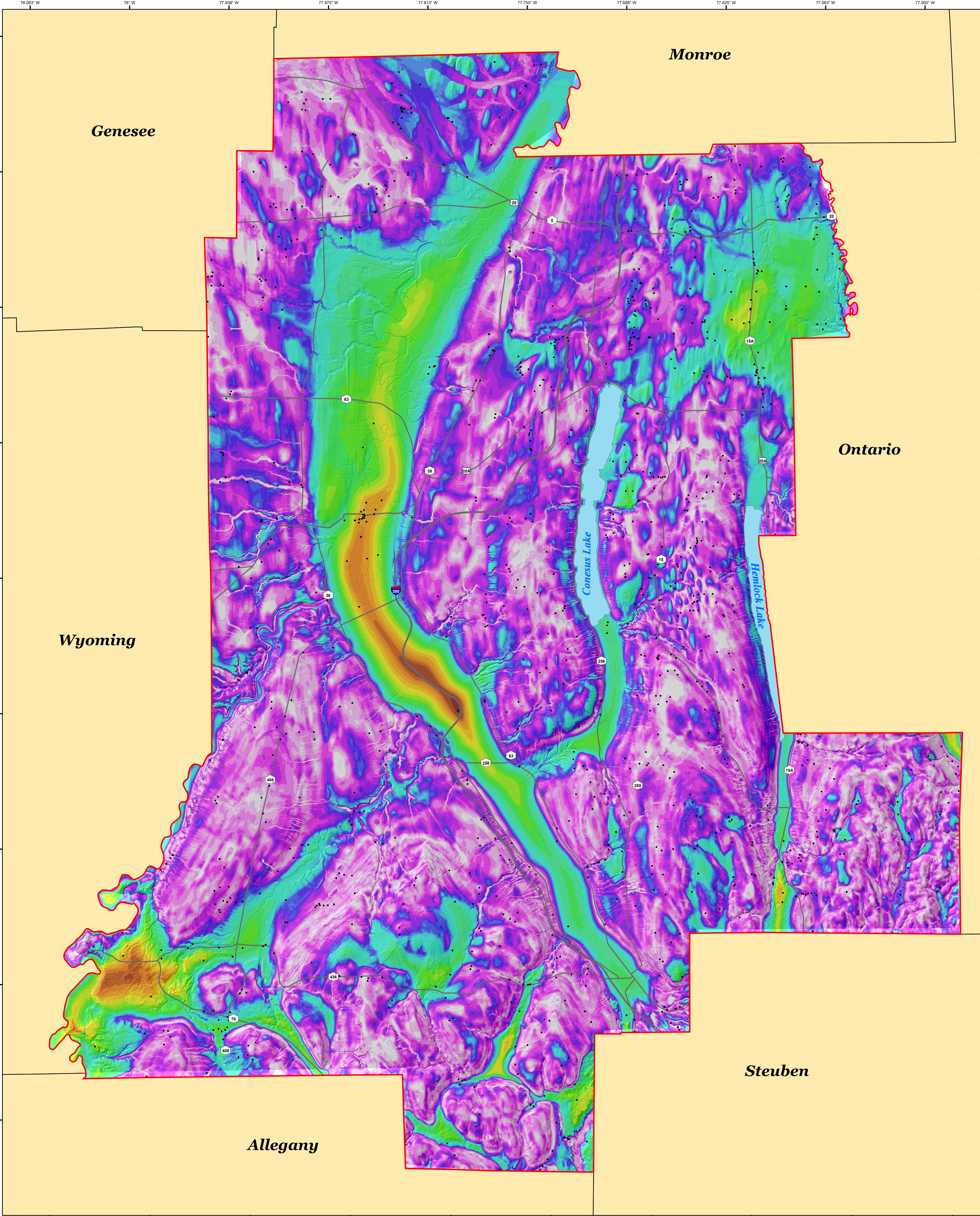
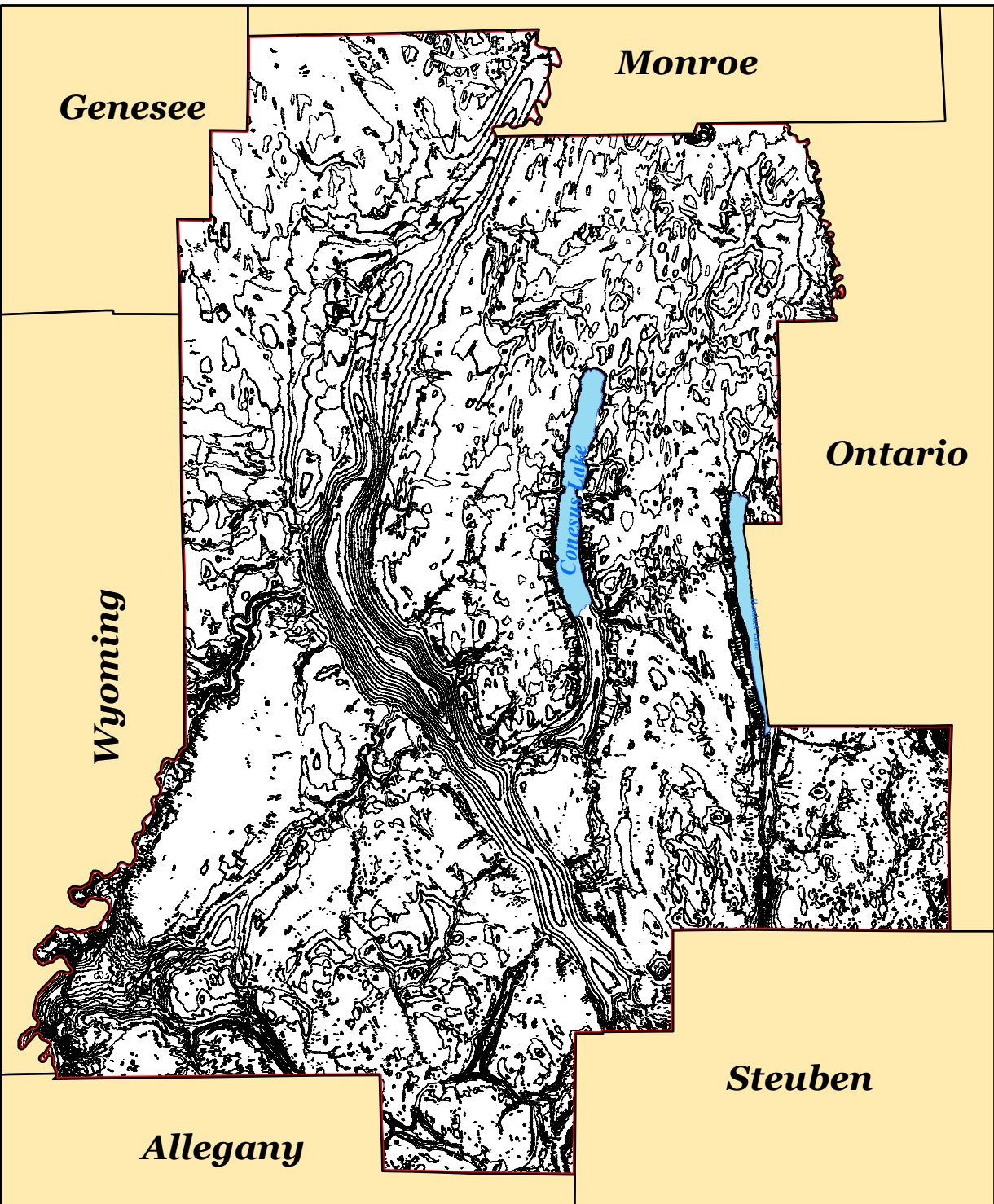
Drift Thickness

Feet Thick

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- 350 - 400
- 400 - 450
- 450 - 500
- 500 - 550
- 550 - 600
- 600 - 650
- 650 - 700
- 700 - 750



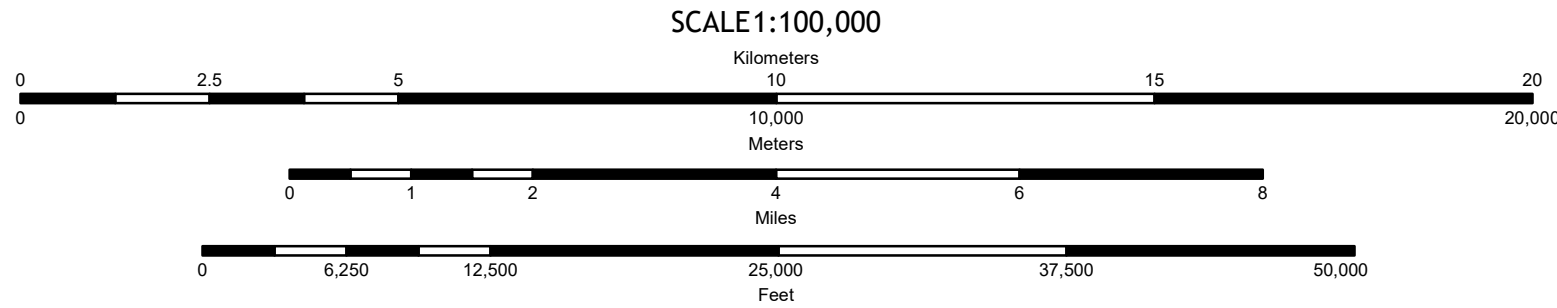
DRIFT THICKNESS CONTOUR MAP



Digital Data and Cartography by A. Blake, J. Rogerson, R. Frieman and K. Backhaus, 2022-23

Universal Transverse Mercator, Zone 18 N North American Datum of 1983
Geographic and hydrography data obtained from the NYSGIS Clearinghouse (<https://gis.ny.gov/>)

Shaded relief from the EneGeneseeLivingston and the 2017 SouthwestB
Fall 1m lidar datasets
(<https://elevation.its.ny.gov/gis/rest/services>)



NOTES
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