

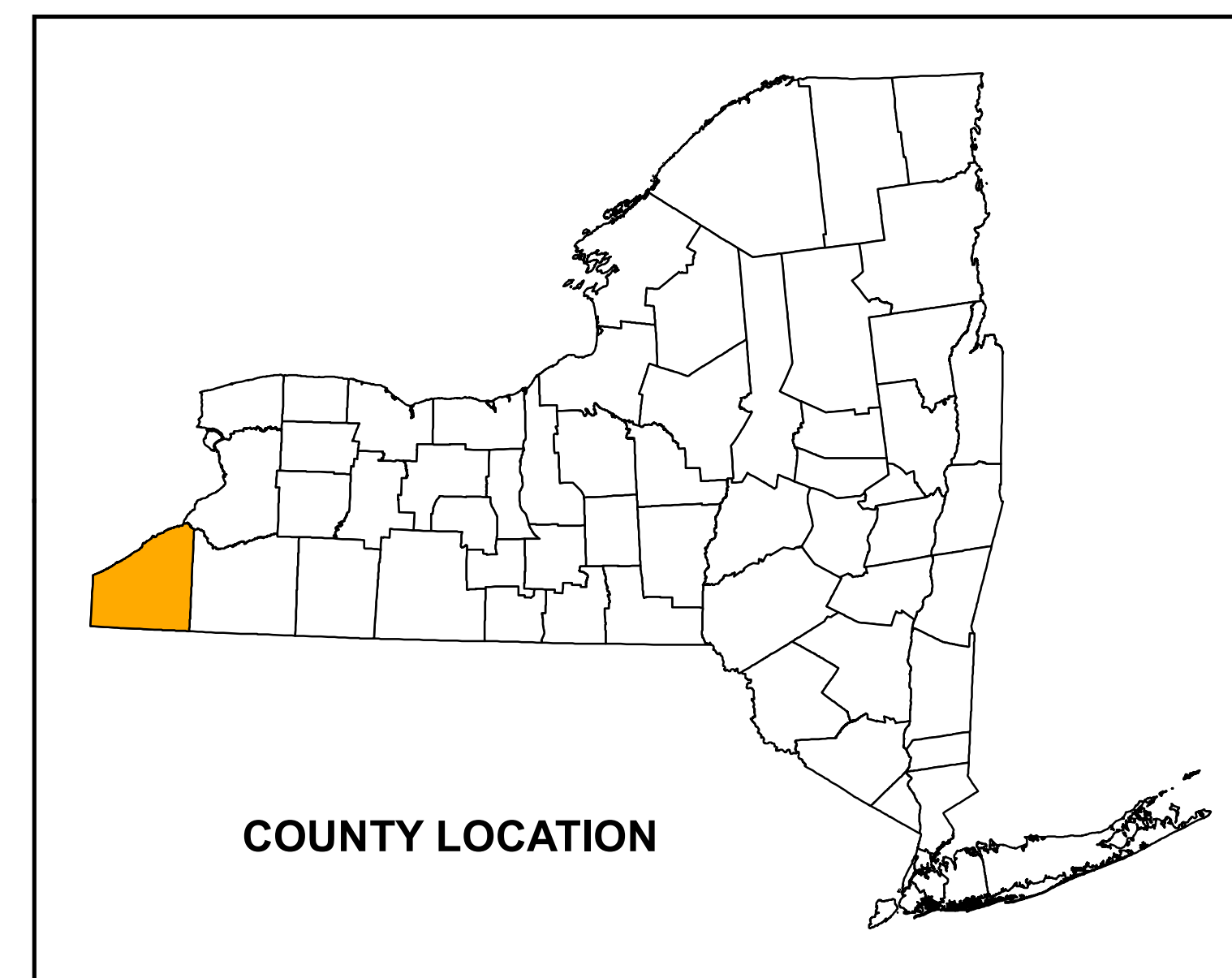
2024

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. Chautauqua County, of Western New York, is bound to the west and the south by the Pennsylvania border, to the east by Cattaraugus County, to the north by Erie County and Lake Erie to the northwest. 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 Chautauqua 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.

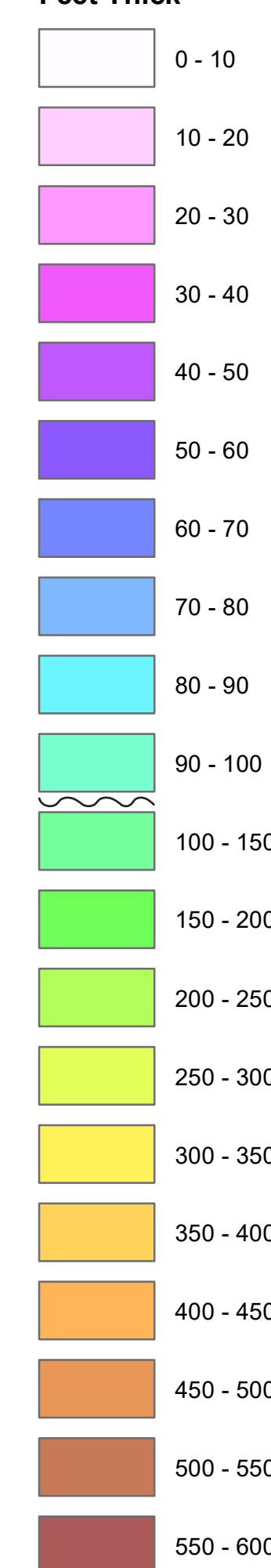
A total of 3,718 bedrock control points were used to delineate bedrock topography in Chautauqua County. These points consisted of 3,013 water wells, 325 bedrock outcrops, 318 engineering boreholes and 62 waterfall locations. These data were compiled from a variety of public sources and imported into ESRI's ArcMap 10.8 software platform. Ground surface elevations for all control points were extracted from the highest available resolution LIDAR DEM data available and subsequently resampled to a cell size/resolution of 1m x 1m. Bedrock elevations were calculated at each location by subtracting the depth-to-bedrock from the ground surface elevation. Bedrock elevation contours generated by ArcMap at a 50-foot interval were 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, the product of which is the county-wide bedrock topography map. 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.

The New York State Museum – Geological Survey has developed a detailed Bedrock Topography Map for Chautauqua 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.

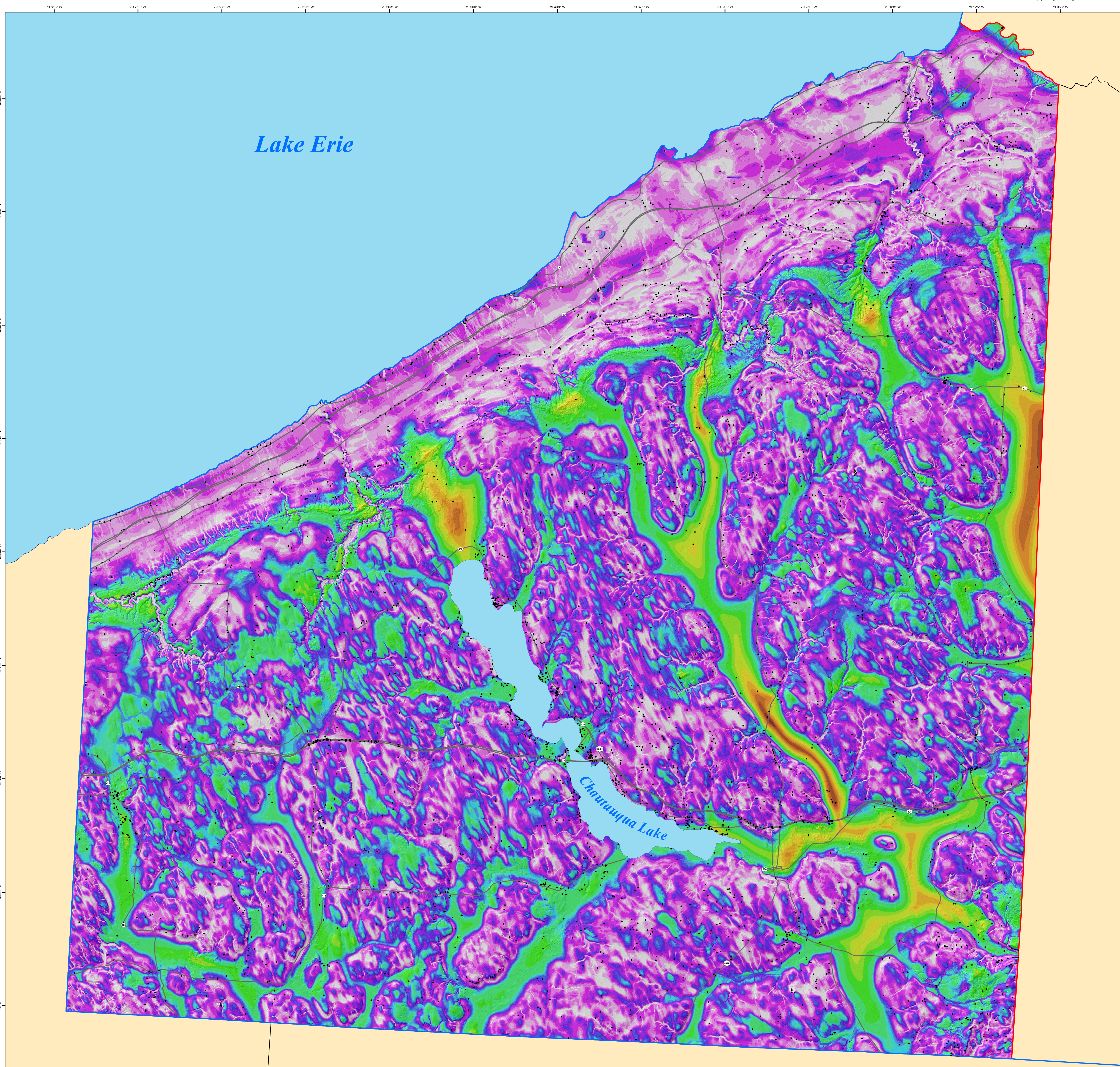


Feet Thick



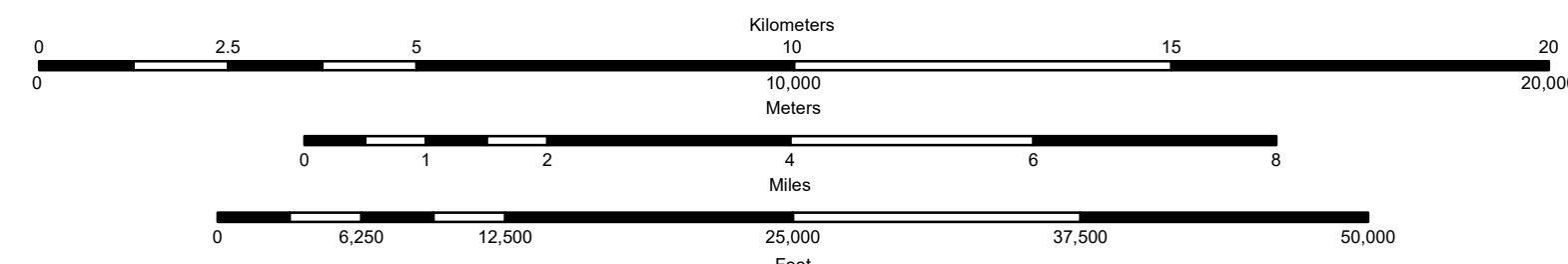
A topographic map of the Lake Erie region. The map shows the shoreline of Lake Erie to the north and west. The area is characterized by dense, dark contour lines indicating a rugged, hilly terrain. A prominent blue line, likely a river or stream, flows through the center of the land area. The map is labeled with 'Lake Erie' in blue text in the upper left, 'Erie' in black text in the upper right, 'Conneaut' in black text on the right side, and 'Warren' in black text at the bottom center. The map is framed by a blue border on the left and bottom, and a red border on the right.

New York State Museum Map & Chart No. 188
ISSN:0097-3793 : ISBN:978-1-55557-442-0



Shaded relief from the Southwest 2017 1m lidar dataset
(<https://elevation.its.ny.gov/arcgis/rest/services>)

SCALE 1:100,000



NOTICE

This preprint may have been funded in part by the USGS National Cooperative Geologic Mapping Program's EXTENDED award number: **03XAC00018** in the year 2001.

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