











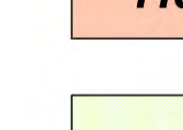





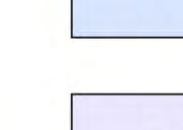

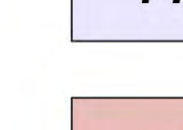













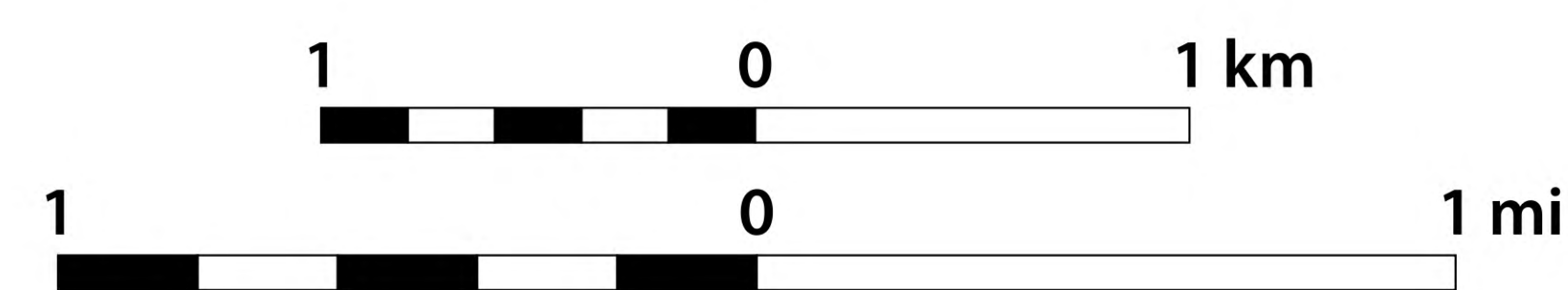
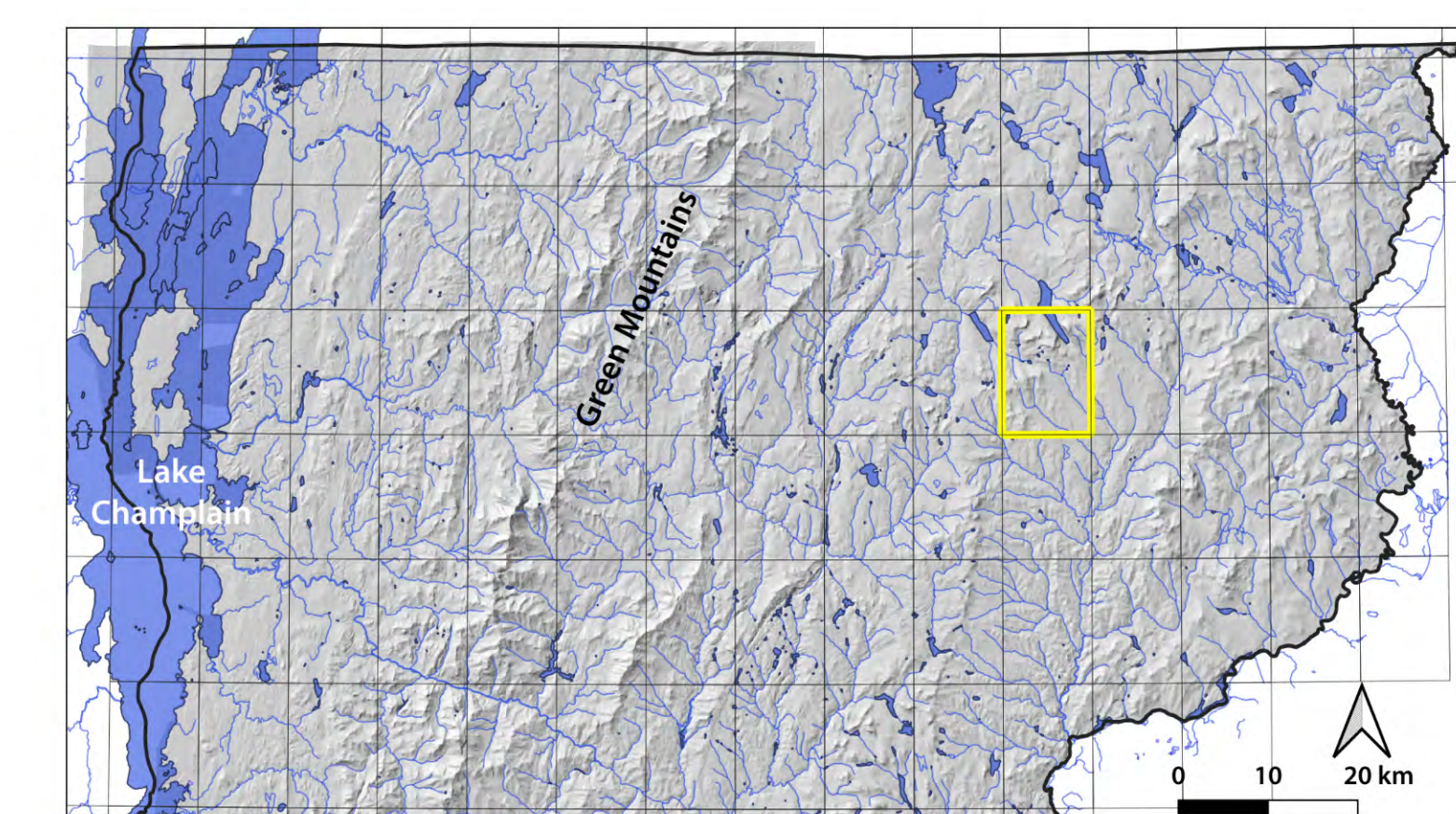
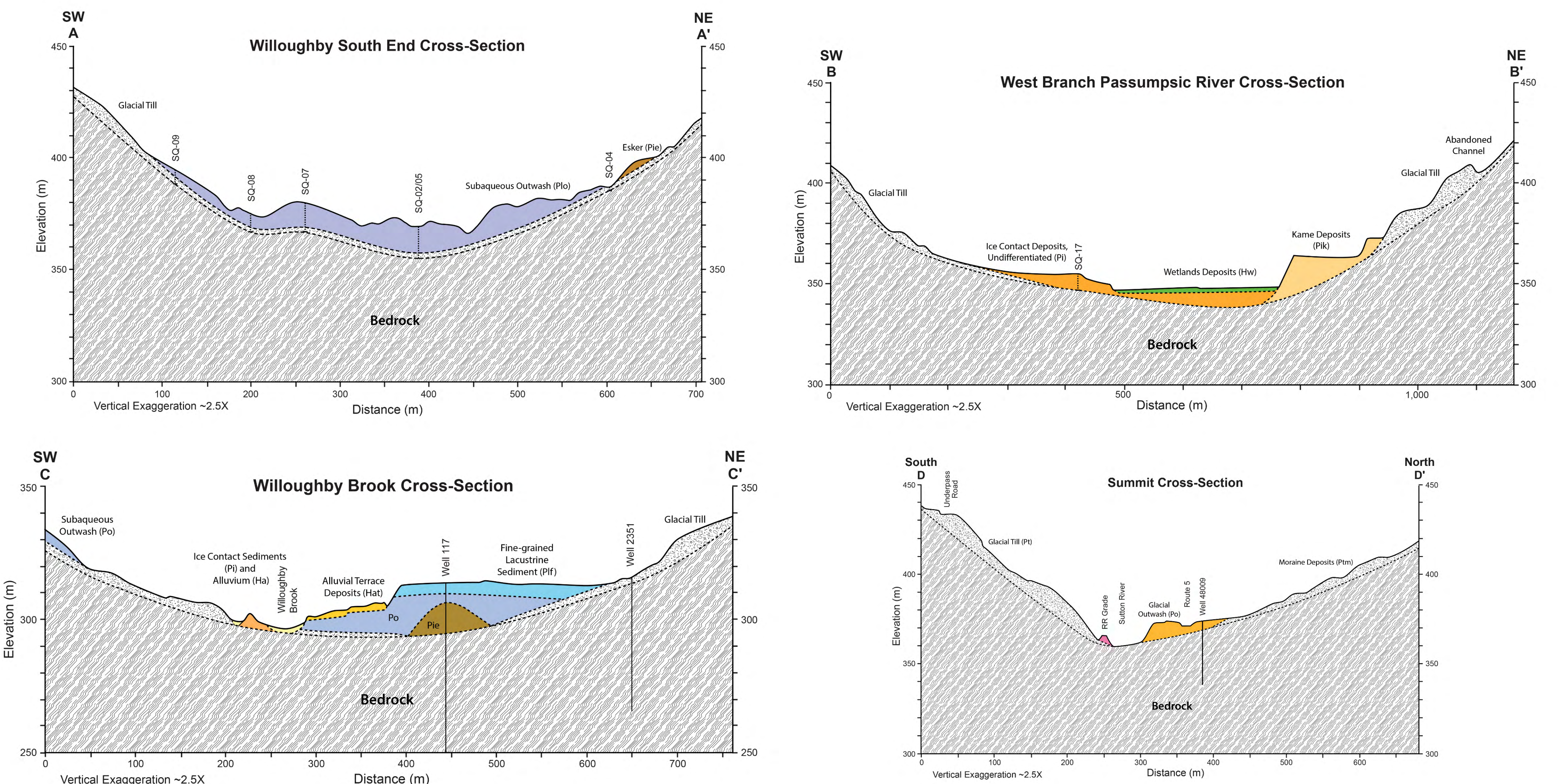
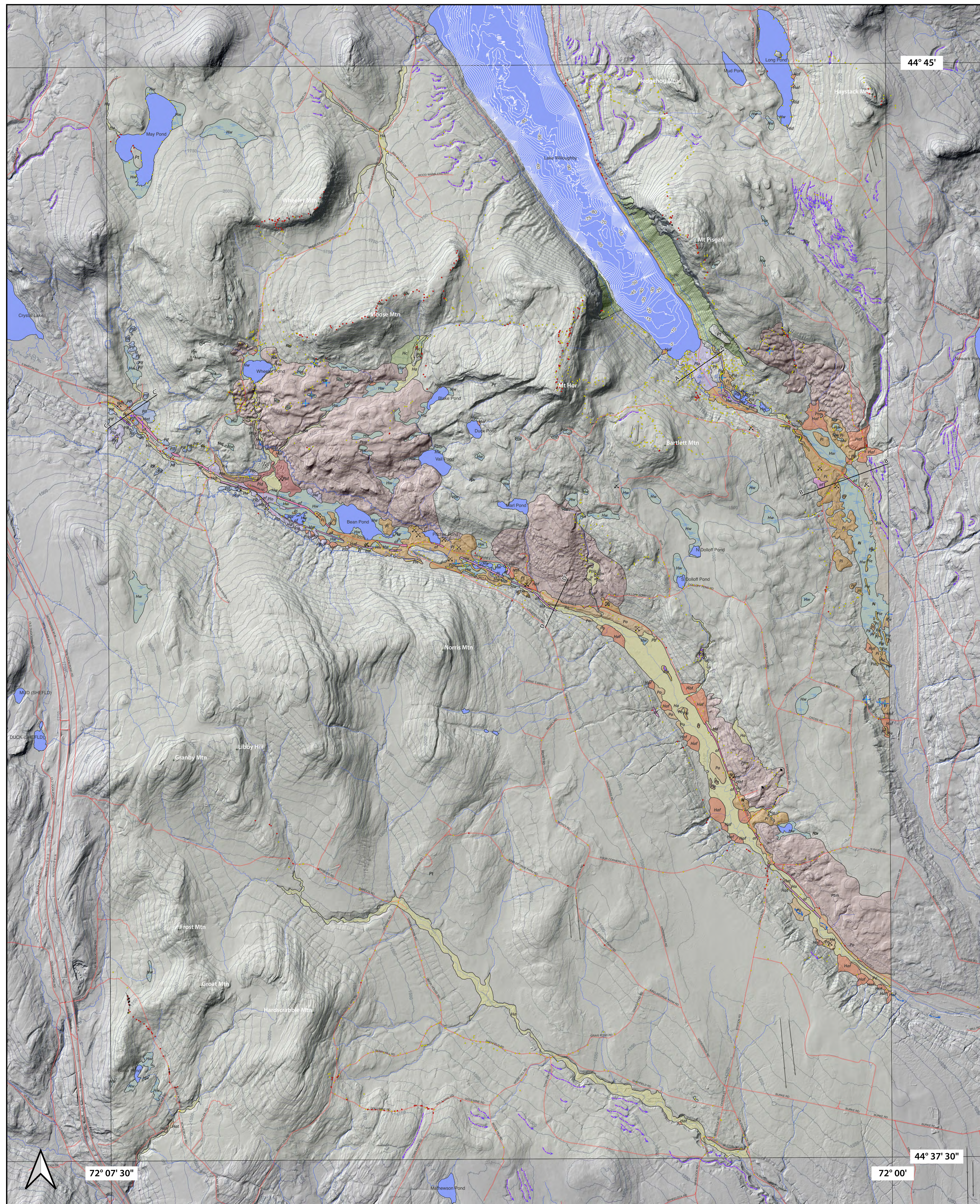


Surficial Geologic Map and Cross-Sections of the Sutton 7.5-minute Quadrangle, Vermont

Stephen F. Wright
 Department of Geography and Geosciences; University of Vermont; Burlington, VT
 2025

Explanation

- | | | | |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------|
|  | Lakes and Ponds: Willoughby bathymetry contours in meter. |  | Surficial Field Site |
|  | af Artificial Fill: Artificially-emplaced material along road beds, embankments and in developed areas. Material varies from natural sand, gravel, or till to various artificial waste materials. Thickness varies. |  | Bedrock Outcrop |
|  | Hw Wetlands Deposits: Accumulations of organic matter and/or clastic sediment in low-lying areas. Includes a wide variety of wetland types. Commonly overlying other deposits such as alluvium, lacustrine sediment, or till. |  | Water Well |
|  | Ha Alluvium: Silt, sand, and gravel deposited by modern streams. Includes stream channel, bar, and floodplain deposits. Wetland deposits are common within these areas and are not distinguished. Thickness is generally equal to the maximum depth of the adjacent stream channel. |  | Glacial Striation |
|  | Hat Alluvial Terrace Deposits: Silt, sand, and gravel deposited on terraces above the modern floodplains of streams. They are composed of a variety of channel, bar, and floodplain deposits. May include late Pleistocene alluvial sediment deposited onto freshly-drained glacial lake bottoms before the main stream and its tributaries incised down into the lacustrine deposits. |  | Geologic Cross sections |
|  | Haf Alluvial Fan: Boulder, cobble, and pebble gravel, pebbly sand, and diamict deposited at sites where steep, stream gradients are sharply reduced. Holocene alluvial fans (Haf) are common at the mouths of steep tributaries where they meet the main stream. |  | Landslide Scarp |
|  | Hc Colluvium Deposits: Fans or aprons of slope-wash sediment (debris flows) that have accumulated at the base of steep cliffs/slopes. Thickness is highly variable. |  | Rock Quarry |
|  | Hld Modern Delta Deposits: Well-sorted sand and gravel deposited in a present-day lake at the mouth of a tributary stream. |  | Gravel Pit |
|  | Plf Lacustrine Sediments, Fine-grained: Clay, silt, and very-fine to fine sand deposited in quiet-water environments of a glacial lake. Commonly laminated. |  | Projection of Glacial Lake Shorelines |
|  | Plo Subaqueous Outwash Deposits: Well-sorted sand and gravel deposited in subaqueous fans within glacial lakes at and near esker tunnel mouths. Sediment deposited close to tunnel mouth is coarse-grained, distal sediments finer-grained. Grades into Plf sediments. |  | Ice-Marginal Channel |
|  | Pld Glacial Lake Delta: Well-sorted sand and gravel deposited in a glacial lake at the mouth of a tributary stream. Includes topset, foreset, and proximal bottomset beds if exposures permit. |  | Lake Outlet Channel |
|  | Po Glacial Outwash Sediments: Glacial meltwater deposits composed of stratified sand and gravel deposited in streams in locations out beyond the glacial margin. |  | Abandoned Stream Channel |
|  | Pik Kame Deposits: Composed primarily of stratified sand and gravel, deposited between an ice-sheet and the adjacent side of the valley. Sediment is derived primarily from meltwater, with variable contributions from the valley sides. May include subaqueous grain flows and debris flows. |  | Kettle |
|  | Pie Esker Sediments: Elongate ridge of ice-contact stratified sand and gravel deposited by glacial meltwater streams in tunnels within or beneath the glacial ice. |  | Moraine Ridges |
|  | Pi Ice Contact Sediments, Undifferentiated: Unsorted to poorly-sorted stratified sand, gravel, and silt deposited in contact with glacial ice. Surface may contain scattered kettle holes formed by melting of buried ice blocks or be a highly complex kame and kettle topography. |  | Esker Ridgeline |
|  | Ptm Moraine Deposits: Composed primarily of till with variable amounts of stratified sand and gravel. Deposited in the vicinity of an ice margin, primarily from the direct melting of glacial ice. Moraines may be distinct ridges, but also include hummocky landforms. Landforms produced by solifluction processes are common. |  | Streamlined Till Ridges |
|  | Pt Glacial Till: Very dense to loose, unsorted to very poorly sorted material deposited directly from glacial ice. Contains a wide range of grain sizes, from clay or silt up to large boulders. Matrix commonly dominated by the silt or sand fraction. Surface boulders are generally common. Thickness is highly variable, from less than 3 meters to greater than 30 meters. |  | Road Centerline |



Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under USGS award number G23AC00462. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

Field work during June of 2024 was assisted by UVM undergraduate students Amelia Bohling, Ciara Hagan, Sicilia Jantzen, Luke Jodice, MJ (Mia) Moline, Heather Morecock, Casper Vanderpoorten, and Zachary Winograd. Additional assistance was provided by Peter Strand of the Vermont Geological Survey.