

# BEDROCK GEOLOGY OF THE LOWVILLE 7.5-MINUTE QUADRANGLE, LEWIS COUNTY, NEW YORK

prepared by  
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## DESCRIPTION OF MAP UNITS

### Holocene

<b>Af</b>	<b>Artificial fill (Af)</b> This unit is generally comprised of coarse-to-fine materials, such as large cement mounds and/or crushed rock, which have been transported anthropogenically and used for construction purposes.
<b>Ha</b>	<b>Holocene alluvium (Ha)</b> Sorted and stratified silt, sand, and gravel, deposited by rivers and streams. May include cobbles and boulders. Inferred to be post-glacial alluvium and includes modern channel, over-bank and fan deposits.

### Pleistocene

<b>Pcc</b>	<b>Pleistocene cover over Adirondack Province crystalline rock (Pcc)</b> Unconsolidated glacial sediments covering and obscuring direct observation of buried Adirondack-related metamorphic and igneous rock. May include various glacial deposits such as sand, sand and gravel, diamicton, and silt and clay.
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### Late Ordovician

<b>Trenton Group</b>	
<b>Oh</b>	<b>Hillier Limestone (Oh)</b> Wavy-bedded argillaceous calcarenite and nodular wackestones with interbedded shales.
<b>Os</b>	<b>Steuben Formation (Os)</b> Dark gray, medium- to coarse-grained, massive crinoidal limestone with minor shale partings. Up to 8m thick. May contain abundant crinoids, brachiopods, gastropods, and trilobites, as well as corals somewhat less commonly. Deposited within range of wave base, in a subtidal, energetic environment.
<b>Or</b>	<b>Rust Formation (Or)</b> Formerly the Rust Member of the Cobourg Formation. Nodular-to-wavy-bedded coarse-grained packstones and grainstones. Includes a wide variety of fauna, such as trilobites, echinoderms, crinoids, and brachiopods, among others. Within the Mill Dam member of the Rust Formation, large-scale ripple marks can be observed. Deposition of the Rust Formation occurred at a shallower depth than the underlying Denley Formation, but it includes several internal shallowing-upward cycles.
<b>Od</b>	<b>Denley Formation (Od)</b> Sequence of dark gray fine-grained to very fine-grained limestones and argillaceous limestones interlayered with dark gray, laminated calcareous shales. Up to 70m thick. Brachiopods, bryozoans, trilobites, cephalopods, and crinoids present. Deposited in a deep shelf, subtidal environment; possibly turbiditic or storm-influenced sedimentation.
<b>Osr</b>	<b>Sugar River Formation (Osr)</b> Dark gray to black, thinly- to medium-bedded, fine- to medium-grained fossiliferous limestones; dark gray, thinly-laminated calcareous shales. Up to 16m thick. Diverse fauna include bryozoans, crinoids, trilobites, and brachiopods. Interpreted as having been deposited in a subtidal, quiet shelf environment.
<b>Okf</b>	<b>Kings Falls Formation (Okf)</b> Dark gray, medium- to thickly-bedded, coarse-grained fossiliferous limestones with a primarily micrite matrix; thinly-bedded calcareous shales, interlayered fossiliferous limestones and coquina. Up to 20m thick. Lower portion brachiopod dominated including some corals; upper portion bryozoan dominated including trilobites, gastropods, and crinoids. Depositional environment transitions from subtidal offshore shoal (concentrating fossil fragments) to a shallow shelf.
<b>On</b>	<b>Napanea Formation (On)</b> Unconformably overlying top of Black River Group formations. Interbedded fine-grained limestones with dark gray, thinly-laminated calcareous shale. Up to 6m thick. Fossil fragments sparse, with low diversity. Deposited in a subtidal, shallow shelf to lagoonal environment.

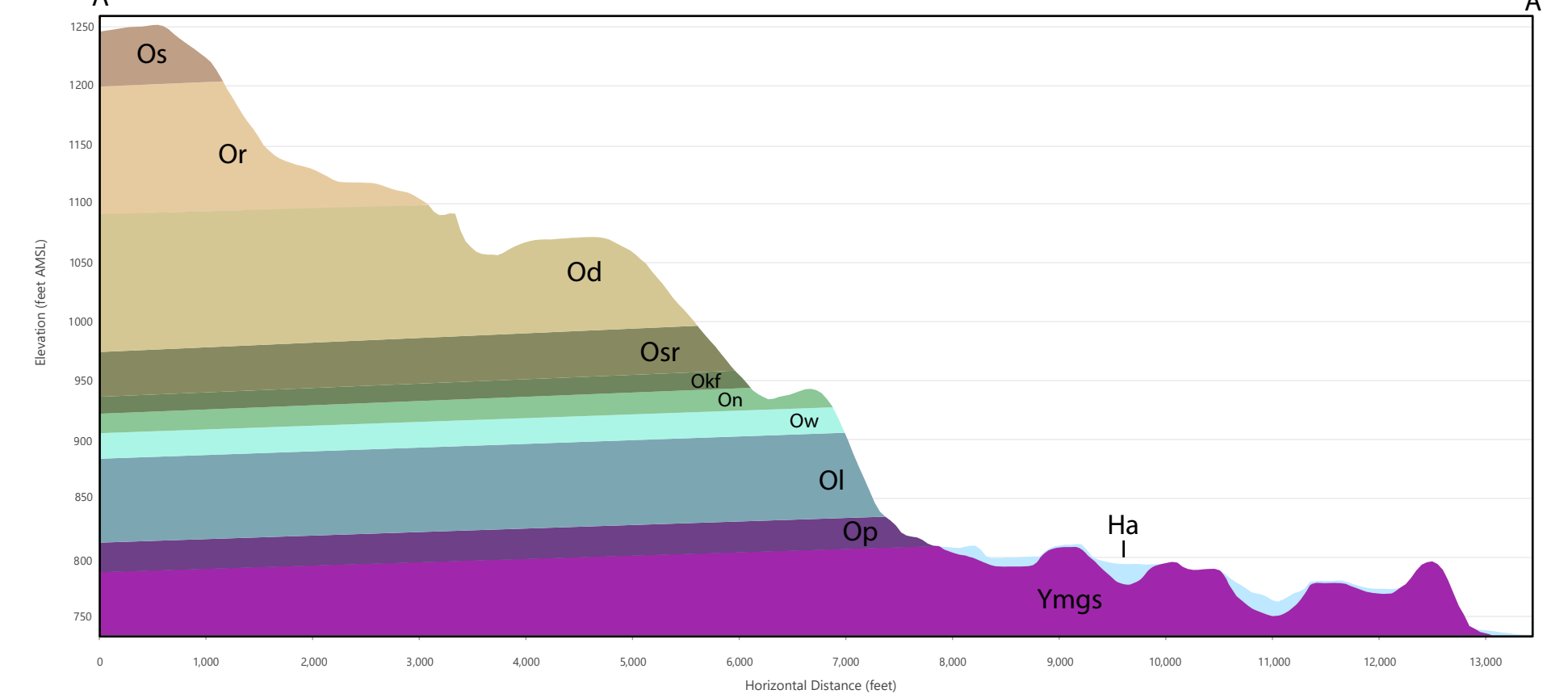
### Black River Group

<b>Ow</b>	<b>Watertown Limestone (Ow)</b> Dark gray, thickly-bedded, fine-grained limestone including fossil fragments floating in a micrite matrix. Often includes chert nodules. Up to 3m thick. Fossils abundant: nautiloids, stromatolites, and coral fragments reworked by biogenic activity as indicated by the presence of horizontal burrows. Deposited in a subtidal, flat-bottomed nearshore environment.
<b>OI</b>	<b>Lowville Formation (OI)</b> Pale to medium gray, thinly-bedded, fine to coarse limestones interbedded with dark gray, fine-grained stylonitic or fossiliferous limestones; medium to dark gray, lumpy-bedded, coarse blocky limestones; and fine- to medium-grained dolomitic sandstones. Up to 18m thick. Fossiliferous intervals include trilobites, ostracodes, corals, gastropods, bryozoans, and pelecypods. Interpreted as having been deposited in oscillating environments, including restricted intertidal mudflats; protects subtidal lagoons and channels and sealed shoals seaward of the lagoons.
<b>Op</b>	<b>Pamella Formation (Op)</b> Primarily fine- to medium-grained dolomitic sandstones. Thinly- to medium-bedded, wavy- to thinly-laminated and can include mudcracks. Up to 6m thick. Fossils rare; ostracodes, trilobites, and vertical burrow trace fossils have been observed. Deposited in a supratidal dolomitic mudflat environment along a passive paleo-shoreline. In the Black River Valley, this to the south where it pinches out and the overlying Lowville Formation directly overlies Precambrian basement.

### Middle Proterozoic

<b>Ungrouped Formations</b>	
<b>Ymgs</b>	<b>Metagranite and Metasyenites (Ymgs)</b> Light gray to pink to reddish, fine- to medium- to coarse-grained, mesoperthite + quartz + hornblende + biotite + plagioclase ± clinopyroxene gneiss. Foliation is highly variable from non-foliated to strongly-foliated. Foliation development depends on modal abundance of mafic minerals. Mafic-rich lithologies are strongly foliated; mafic-free rocks show no obvious foliation, and are described as alaskites or leucogranites. Modal abundance of quartz varies from less than 5% (metasyenite) to 5-20% (meta-quartz syenite), to greater than 20% (metagranite). Commonly contains layers of amphibolite ranging in width from a few centimeters to 10m; not mappable at this scale. Contacts with amphibolites are sharp. Foliation-parallel milky quartz veins and granitic pegmatites common. Cross-cutting granitic pegmatites occur locally.
<b>Ych</b>	<b>Charnokite gneiss (Ych)</b> Light brown to rusty brown, fine- to medium-grained, mesoperthite + quartz + hornblende ± hypersthene gneiss. Weakly-foliated as mafic minerals are lacking. Hornblende is dominant mafic phase.

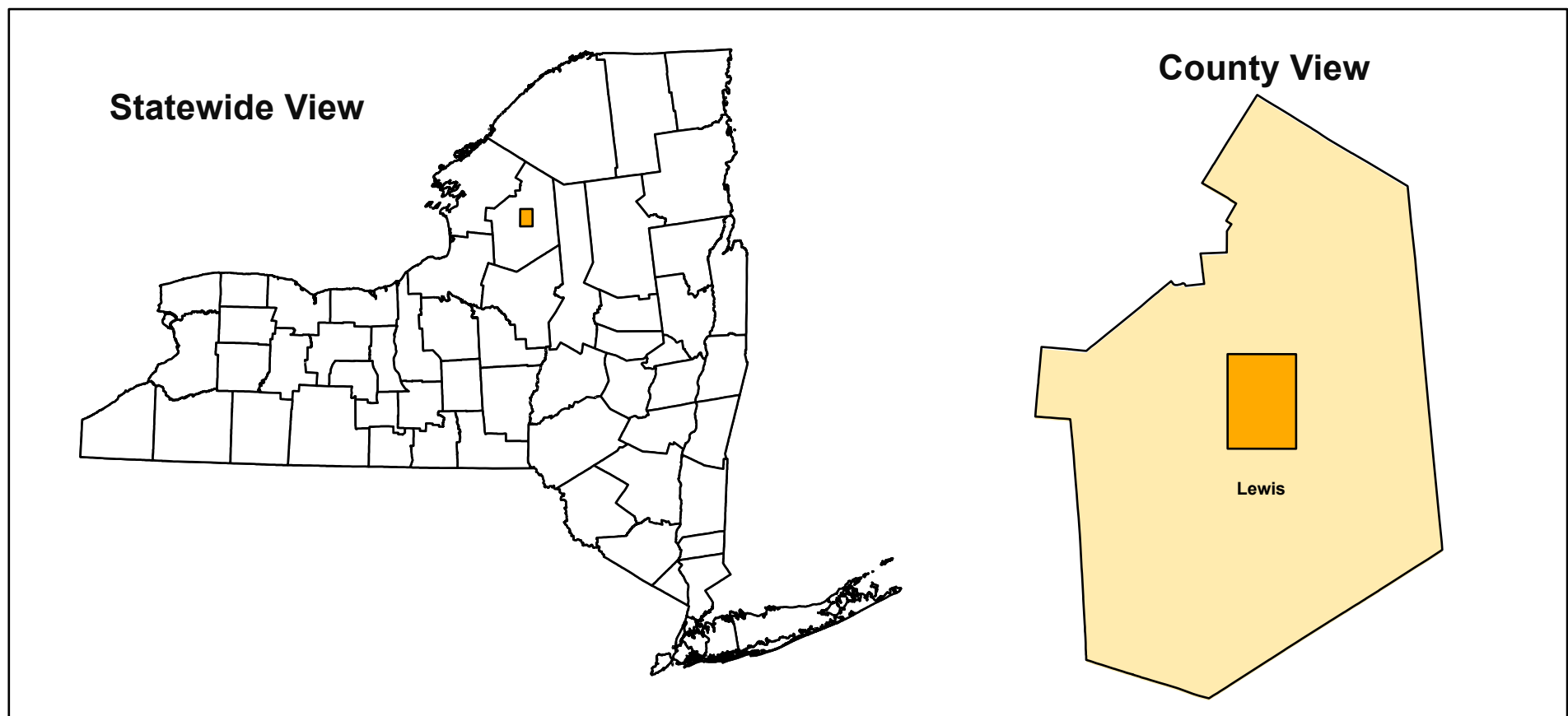
## CROSS-SECTION A-A'



## SYMBOLS

— Street	— Stream	● NYSGS Sample Location
— Highway	— Cross-Section Line	● NYSDOT Boring Location
— Railroad	— Definite Contact	● NYSEEC Water Well Location
— Airport Runway	— Inferred Contact	— Foliation
— Water Body	— Inferred Fault	— Vertical Foliation
	— Waterline	

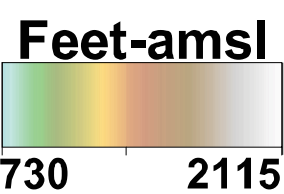
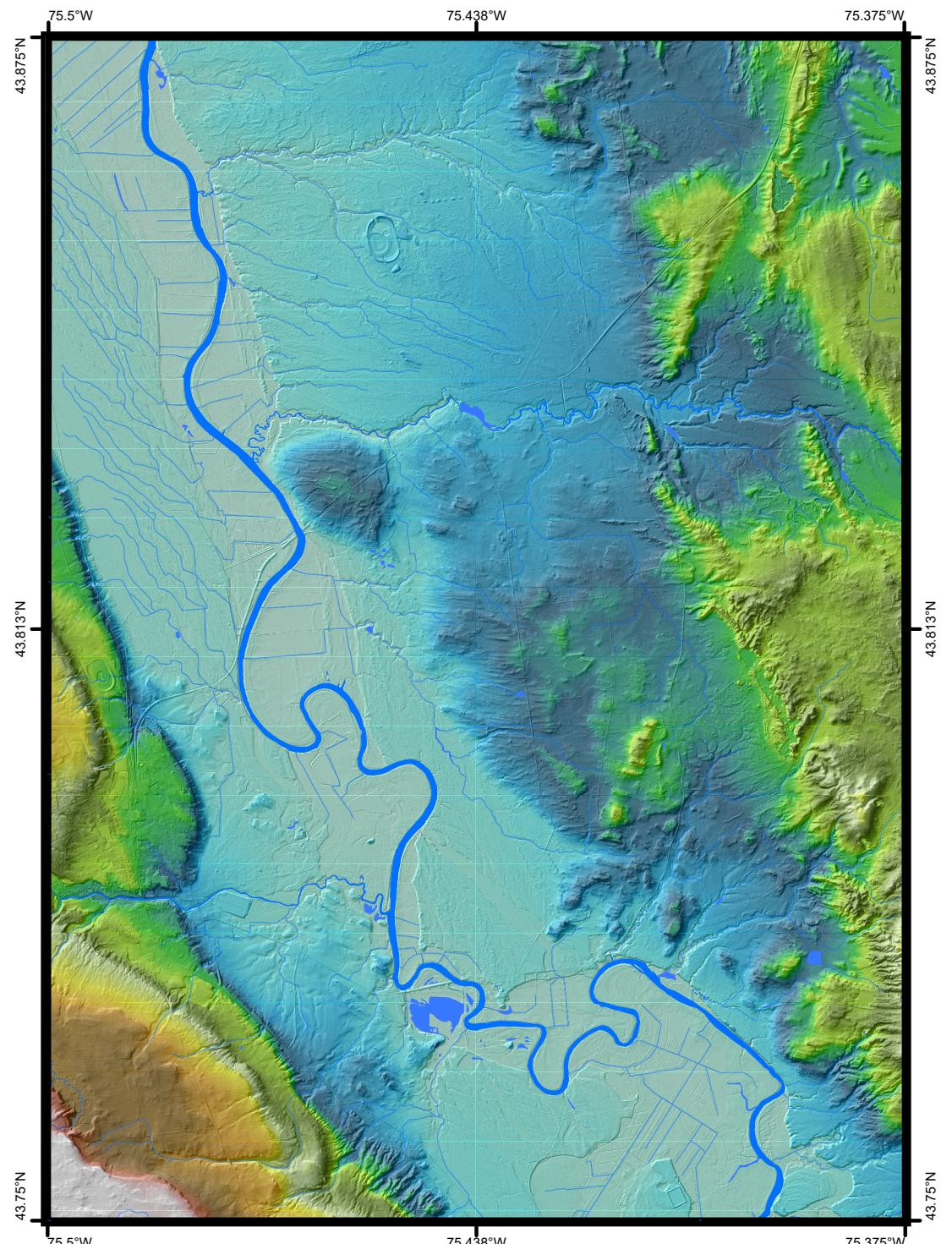
## QUADRANGLE LOCATION



## ADJOINING QUADRANGLES

CARTAGE	CROGHAN	BELFORT
WEST LOWVILLE	LOWVILLE	CRYSTAL DALE
PACE	GLENFIELD	BRANTINGHAM

## QUADRANGLE ELEVATION



1:75,000 scale; 2x vertical exaggeration  
Shaded relief generated from 2022 Lake Ontario  
and Hudson River 1m lidar data set

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2024

NOTICE  
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