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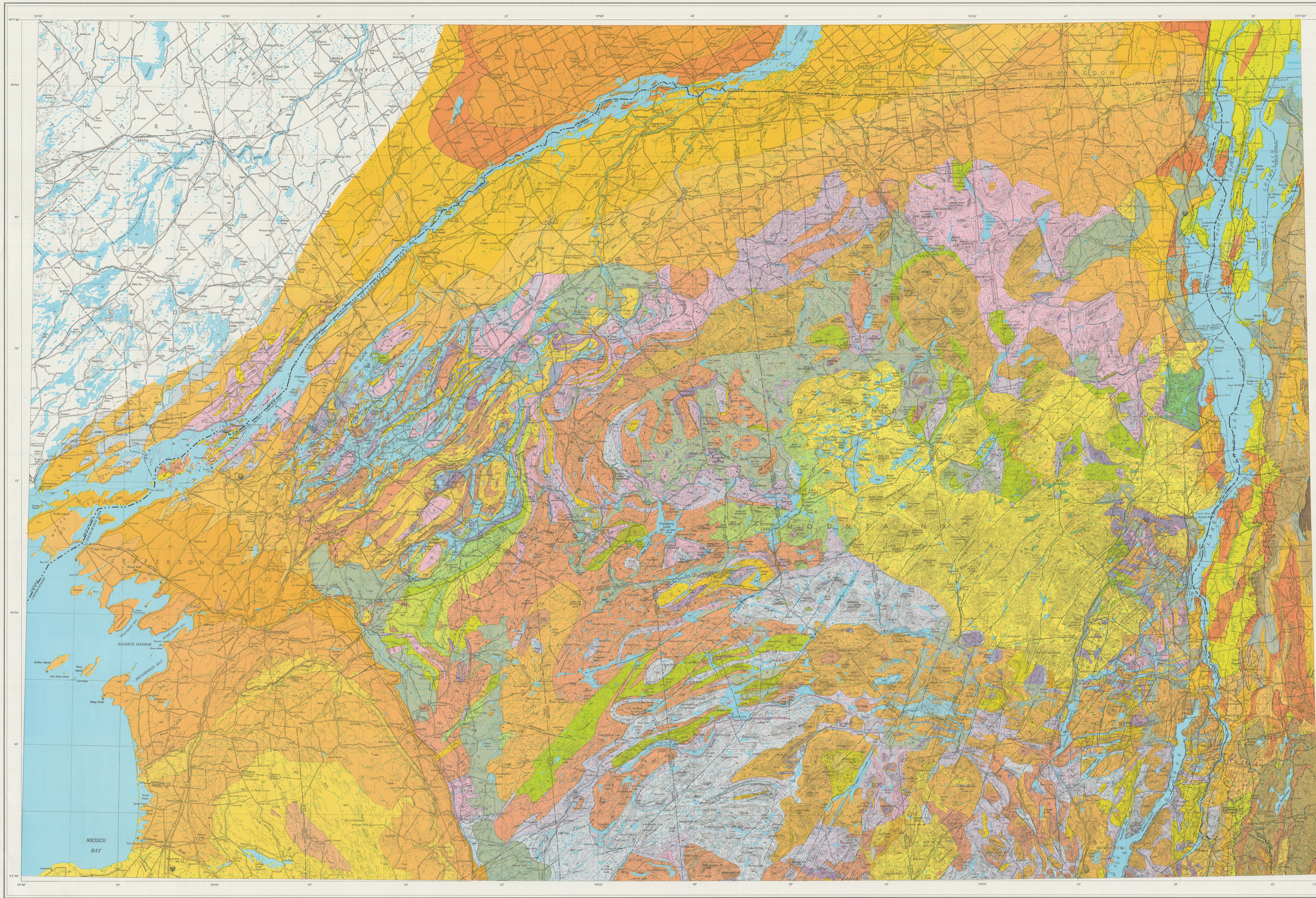
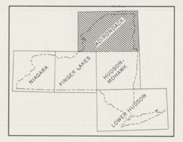
THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT

GEOLOGICAL SURVEY
James F. Davis, State Geologist



Topographic Base from AMS Quadrangles 1:250,000 scale.

NEW YORK STATE MUSEUM AND SCIENCE SERVICE
MAP AND CHART SERIES NO. 15



GEOLOGIC MAP OF NEW YORK

1970
Reprinted 1995

Adirondack Sheet

Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET

COMPILED AND EDITED BY
Yngvar W. Isachsen
Donald W. Fisher
March, 1970

Williams & Heintz Map Corporation, Capitol Heights, Md. 20743

Notice:
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LEGEND

NOTE: Where the uniformity of lithology and availability of pattern combinations permit, the dominant lithology of a mapping unit is symbolized as follows:

Cross-hatch patterns:
- rhombic grid—dolostones, dolomitic marbles.
- rectangular grid—limestones, calcitic marbles

Line patterns:
- straight—pelitic rocks, shales, shales interbedded with siltstones and sandstones
- wavy—phyllites, schists, pelitic gneisses

Stipple patterns:
- regular red—quartz sandstones and quartzites
- regular yellow—unconsolidated deposits
- random red—non-marine sedimentary rocks
- blob—graywackes in Paleozoic; inequigranular gneisses in Proterozoic
- blue circle—mélange (Ordovician only)

Random dash, V, and + patterns: igneous or meta-igneous rocks (except mug)

A query (?) placed before the symbol of a mapping unit signifies that the unit may be older than the age indicated. A query placed after the symbol of a mapping unit signifies doubt concerning the identification of that unit.

An irregular lower margin on the "color boxes" signifies that the unit has an unconformable relationship with subjacent units, however not necessarily with the next unit listed. Wavy lines signify parallel unconformities; sawtooth lines signify angular unconformities.

Boxes outlined in red denote igneous or meta-igneous rocks.

CENOZOIC — Quaternary

GLACIAL AND ALLUVIAL DEPOSITS

Q — Underlying bedrock geology unknown.

MESOZOIC — Jurassic-Lower Cretaceous

MESOZOIC INTRUSIVES

KJd — Lamprophyre, trachyte, and rhyolite dikes; not shown in Proterozoic terrane.

KJtp — Trachyte porphyry laccolith (?) at Cannon's Point near Willsboro, Essex County.

PALEOZOIC

Lower Silurian

MEDINA GROUP AND QUEENSTON FORMATION
up to 100 ft. (30 m.)

SmOq — Undifferentiated Medina Group: Grimsby Formation—sandstones, shale; and Queenston Formation—siltstone, shale.

Upper Ordovician — Middle Ordovician

LORRAINE, TRENTON, AND BLACK RIVER GROUPS
up to 1600 ft. (490 m.)

Oo — Oswego Sandstone.

Opw — Pulaski and Whetstone Gulf Formations—siltstone, shale.

Ou — Utica Shale

Oag — Austin Glen Formation (Pawlet in Vermont)—graywacke, shale.

Oc — Canajoharie Shale, includes Hortonville and Ira Shales in Vermont.

Oi — Iberville Shale (in Vermont)

Osp — Stony Point Shale.

Ocum — Cumberland Head Argillite.

Ot — Trenton Group.
In Black River Valley: Cobourg Formation—Hillier shale and limestone Member, Hallowell limestone Member; Denley, Sugar River, Kings Falls, and Rockland Limestones.
In Champlain Valley: Glens Falls Formation–Montreal shale and limestone Member, Larrabee limestone Member.

Obr — Black River Group.
In Black River Valley: Chaumont Limestone—locally cherty; Lowville Limestone; Pamelia Formation—dolostone, shale, arkose.
In Champlain Valley: Amsterdam, Isle La Motte, and Lowville Limestones; Pamelia Dolostone.

Otbr — Trenton and Black River Groups, undivided. Glens Falls and Orwell Limestones.
In Canada: Lindsay, Verulam, Bobcaygeon, Gull River Limestones; Shadow Lake Dolostone.

Otm — Taconic Mélange—chaotic mixture of Early Cambrian thru Middle Ordovician pebble to block-size clasts in a pelitic matrix of Middle Ordovician (Barneveld) age. Rims and floors earlier submarine gravity slides of Taconian Orogeny.

O€s — Cambrian thru Middle Ordovician (Barneveld) carbonate rocks occurring as slivers caught along thrusts of later allochthones, or carbonate blocks in Taconic Mélange.

CHAZY GROUP
0-725 ft. (0-221 m.)

Och — Valcour, Crown Point, and Day Point Limestones—locally reefy, Ste. Therese Siltstone at base; Middlebury Limestone in Vermont; St. Martin and Rockcliffe Limestones in St. Lawrence Valley. Includes some Otbr and Obk adjacent to Champlain Thrust in Vermont.

Lower Ordovician — Cambrian

BEEKMANTOWN GROUP, POTSDAM SANDSTONE, AND VERMONT VALLEY SEQUENCE
up to 2,500 ft. (760 m.)

Obk — Beekmantown Group (in part).
In St. Lawrence Valley: Ogdensburg Dolostone (Beauharnois Dolostone in Canada);
In Champlain Valley: Providence Island Dolostone; Fort Cassin Formation—limestone, dolostone; Fort Ann Formation (Spellman of Clinton and Essex Counties)—limestone, dolostone; Cutting Formation—dolostone (locally cherty), limestone, siltstone.
In Vermont: includes Bridport, Bascom, Cutting, and Shelburne carbonates.

O€th — Theresa Formation—dolostone, sandstone (Chateauguay in Quebec).

O€s — slivers, as O€s above.

€bk — Beekmantown Group (in part).
In Champlain Valley: Whitehall Formation—dolostone, limestone (with **Cryptozoon** reefs); Ticonderoga Formation—dolostone (locally cherty), sandstone.
In Vermont: Clarendon Springs Dolostone; Danby Formation—sandstone, quartzite, dolostone.

€wmd — In Vermont: Winooski Dolostone, Monkton Quartzite, and Dunham (Rutland) Dolostone.

€p — Potsdam Sandstone (Covey Hill in Quebec).

€c — In Vermont: Cheshire Quartzite.

Ordovician — Cambrian

EUGEOSYNCLINAL (ALLOCHTHONOUS) SEQUENCE
up to 3,000 ft.? (900 m.)

Omi — Mount Merino and Indian River Formations—shale, slate, cherts.

Op — Poultney Formation ("B" and "C" Members)—shale, slate, siltstone.

€pw — Poultney Formation ("A" Member)—shale, limestone; Hatch Hill Formation—shale, dolostone; West Castleton Formation—shale, limestone, conglomerate.

?€m — Mettawee Slate (Bull in Vermont), includes Castleton (North Brittain) Conglomerate. Mudd Pond Quartzite, Zion Hill Quartzite, and Bomoseen Graywacke Members.

MIDDLE PROTEROZOIC

INTRUSIVE PEGMATITE DIKES

p — Granite pegmatite dike (unmetamorphosed).

METAMORPHIC ROCKS OF IGNEOUS ORIGIN

gb — Metagabbro, olivine metagabbro, derived amphibolite.

a — Metanorthosite and anorthositic gneiss; overprint signifies dark mineral content in excess of 10 percent (mainly gabbroic or noritic metanorthosite); mafic mineral percentage contoured in northwestern Marcy massif (St. Regis Quadrangle); contour value shown on high side of contour line. See also ach, ack, amu.

Relative ages of units listed below are unknown.

METAMORPHIC ROCKS OF SEDIMENTARY ORIGIN
(PROBABLY INCLUDES SOME METAVOLCANICS)

bqp — Biotite-quartz-plagioclase gneiss, amphibolite, and related migmatite; locally sillimanitic; commonly garnetiferous in and adjacent to Adirondack Highlands.

bqpq — Biotite-quartz-plagioclase gneiss, commonly very low in biotite content, with interbedded feldspathic and biotitic quartzite and amphibolite; sillimanite and garnet common, graphite sporadic.

cs — Dolomitic and calcitic marbles interlayered with significant amounts of calcsilicate rock, metasedimentary amphibolite, pyroxene granulite, and various gneisses; includes interlayered diopsidic and tremolitic marble and quartzite, and talc-tremolite rock (mined in Balmat-Edwards belt, northwest Adirondacks).

garb — Quartz-feldspar gneiss with variable amounts of garnet, sillimanite, biotite.

mb — Predominantly calcitic and dolomitic marble, variably siliceous; in part with calcsilicate rock and amphibolite.

mu — Undivided metasedimentary rock and related migmatite.

qt — Quartzite, quartz schist and graphitic schist; in part feldspathic, micaceous, garnetiferous, sillimanitic.

METAMORPHIC ROCKS OF UNCERTAIN ORIGIN

Mangeritic, Syenitic, Charnockitic, and Quartz Syenitic Gneisses

ffg — Ferrohedenbergite-fayalite granite and granitic gneiss.

hqs — Hornblende-quartz syenitic gneiss. Overprint signifies inequigranular texture.

hs — Hornblende syenitic gneiss, in part biotitic. Overprint signifies inequigranular texture.

phgs — Charnockitic, granitic, and quartz syenitic gneisses, variably leucocratic, containing varying amounts of hornblende, pyroxenes, biotite; may contain interlayered amphibolite, metasedimentary gneiss, migmatite. Overprint signifies inequigranular texture or phacoidal structure.

phqs — Charnockite, mangerite, pyroxene-(hornblende)-quartz syenitic gneiss; overprint signifies inequigranular texture.

ps — Mangerite, pyroxene syenitic gneiss, pyroxene-(hornblende) syenitic gneiss; mesoperthite common. Overprint signifies inequigranular texture.

Miscellaneous

am — Amphibolite, commonly biotitic; garnetiferous, pyroxenic, in and adjacent to Adirondack Highlands.

hbg — Biotite and/or hornblende granitic gneiss, locally pyroxenic; commonly with subordinate leucogranitic gneiss, biotite-quartz-plagioclase gneiss, other metasedimentary rocks, amphibolite, migmatite. Amphibolite with porphyroblasts of K-feldspar locally prominent in northwest Adirondacks. Overprint signifies inequigranular texture or phacoidal structure. In northwest Adirondacks, grades into phg.

lg — Leucogranitic (alaskitic) gneiss; sodic plagioclase ranges from generally subordinate to locally dominant; locally, with biotite, hornblende, pyroxene, garnet, sillimanite, disseminated magnetite; commonly contains metasedimentary layers, amphibolite, migmatite; plagioclase-rich variety is host to magnetite ore bodies in eastern Adirondacks.

phg — Pyroxene and/or hornblende granitic gneiss, biotitic in part; sodic plagioclase ranges from generally subordinate to locally dominant; plagioclase-rich facies locally contain disseminated magnetite and magnetite ore bodies; grades westward into hbg, and southward into lg.

UNDIVIDED AND MIXED GNEISSES

amg — Interlayered amphibolite and granitic, charnockitic, mangeritic, or syenitic gneiss.

mug — Interlayered metasedimentary rock and granitic, charnockitic, mangeritic, or syenitic gneiss.

ach — Hybrid rock: mangeritic to charnockitic gneiss with xenocrysts of calcic andesine and, locally, xenoliths of anorthosite; with increasing percentage of anorthosite component, passes gradationally into anorthositic rocks.

ack — Interlayered gabbroic or noritic metanorthosite, mangerite or charnockite, and the ach lithology described above.

amu — Hybrid rock: ranges from anorthositic rock with local blocks, shreds or layers of undifferentiated metasediment, to mappable roof pendants and/or xenoliths of metasediment in anorthositic rock.

MAP SYMBOLS

Observed or approximately located contact. In Proterozoic terranes, direction of dip of bedding and/or foliation indicated by triangle.

Conjectural contact; includes projections beneath extensive Quaternary cover and many contacts based on reconnaissance mapping.

Hypothetical contact; projection across unmapped area.

Fault; where known to be a normal fault, hachures on relatively downthrown side.

Thrust or reverse fault, saw teeth on relatively overthrust block.

Shear zone or topographic lineament. Where mapped in detail, such lineaments are commonly found to be high angle faults with associated fault breccia.

Antiform, showing direction of plunge (in Proterozoic terranes only).

Synform, showing direction of plunge (in Proterozoic terranes only).

Direction of plunge of fold axis or other linear element (in Proterozoic terranes only).

Boundary between areas having bedrock outcrops and areas of extensive Quaternary cover.

F4 — Site of cored drill hole; cores up to 2000 feet long in metanorthosite (F4, F6, W1, W2) and charnockite (F5) available for study at Geological Survey - New York State Museum and Science Service.

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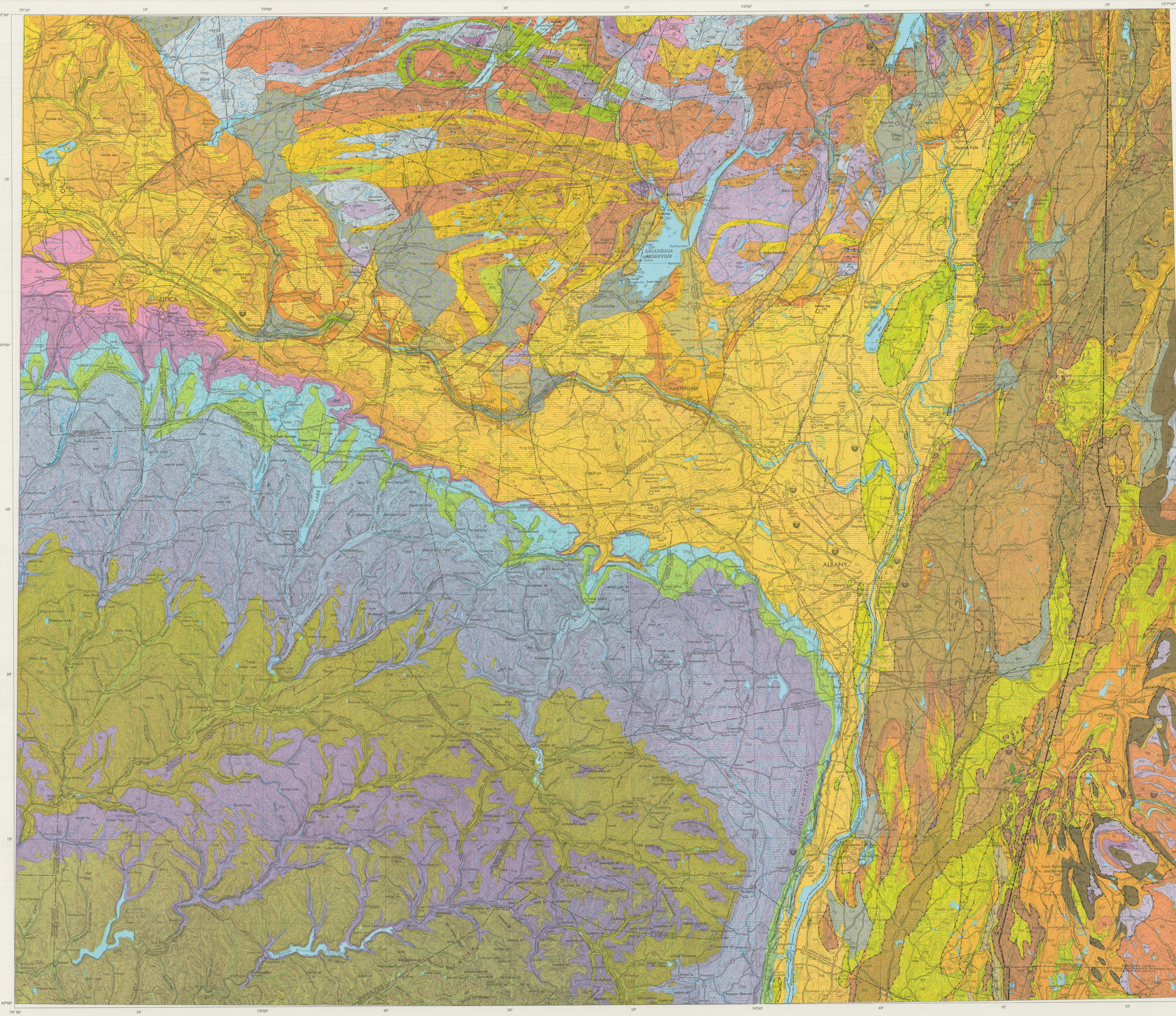

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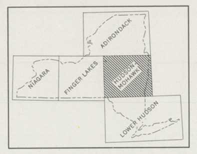

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Hudson - Mohawk Sheet

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COMPILED AND EDITED BY
Donald W. Fisher
Yngvar W. Isachsen
Lawrence V. Rickard
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MESOZOIC — Jurassic-Lower Cretaceous

MESOZOIC INTRUSIVES

KJd — Lamprophyre, diabase, and albite-basalt dikes; not shown in Proterozoic terrane.

PALEOZOIC — Upper Devonian

WEST FALLS GROUP
1,500-2,100 ft. (460-640 m.)

- Dwh — Honesdale Formation—sandstone, shale.
- Dws — Slide Mountain Formation—sandstone, shale, conglomerate.
- Dwm — Beers Hill, Dunn Hill, Millport, and Moreland Shales.
- Dww — upper Walton Formation—shale, sandstone, conglomerate.

SONYEA GROUP
700-1100 ft. (210-340 m.)

- Ds — "Enfield" and Kattel Formations—shale, siltstone, sandstone.
- Dsw — lower Walton Formation—shale, sandstone, conglomerate.

GENESEE GROUP
1,200-1,500 ft. (370-460 m.)

- Dgo — Oneonta Formation—shale, sandstone, conglomerate.
- Dgu — Unadilla, Laurens, New Lisbon, and Gilboa Formations—shale, siltstone, sandstone.

Middle Devonian

HAMILTON GROUP
1,700-2,800 ft. (520-850 m.)

- Dhmo — Moscow Formation—In west: Cooperstown and Portland Point shale and sandstone Members; In east: "Manorkill" and Portland Point shale and sandstone Members.
- Dhpm — Panther Mountain Formation—shale, siltstone, sandstone.
- Dhmr — Marcellus Formation—Pecksport, Solsville, Otsego, and Chittenango shale and sandstone Members, Cherry Valley Limestone, and Union Springs Shale Members.
- Dhpl — Plattekill Formation—shale, sandstone; Ashokan Formation—shale, sandstone.
- Dhm — Undifferentiated lower Hamilton Group—Panther Mountain, Mount Marion, Stony Hollow, and Union Springs shales and sandstones.

ONONDAGA LIMESTONE AND ULSTER GROUP
100-500 ft. (30-150 m.)

- Don — Onondaga Limestone—Seneca, Morehouse (cherty), and Nedrow Limestone Members, Edgecliff cherty limestone Member, local bioherms.
- Dou — Onondaga Limestone; Schoharie Formation—shale, limestone; Carlisle Center Siltstone; Esopus Shale.
- Do — Oriskany Formation—sandstone, arenaceous limestone.
- Dgl — Glenerie Formation—limestone, chert.

Lower Devonian

HELDERBERG GROUP
200-300 ft. (60-90 m.)

Dhg — West of Albany: Alsen, Becraft, New Scotland, Kalkberg, Coeymans, and Manlius Limestones; Rondout Dolostone.
South of Albany: Port Ewen, Alsen thru Manlius Limestones; Rondout Dolostone.

UNDIFFERENTIATED LOWER DEVONIAN AND SILURIAN ROCKS
350 ft. (110 m.)

DS — Port Ewen thru Manlius Limestones; Rondout Dolostone.

Upper Silurian

COBLESKILL LIMESTONE AND SALINA GROUP
0-700 ft. (0-210 m.)

- Scs — Cobleskill Limestone; Bertie, Camillus, and Syracuse Formations—shale, dolostone; Brayman Shale.
- Sv — Vernon Shale.

LOCKPORT GROUP
0-75 ft. (0-23 m.)

Sl — Ilion Shale.

Lower Silurian

CLINTON GROUP
0-350 ft. (0-110 m.)

Scl — Herkimer Sandstone including Joslin Hill and Jordanville Members; Kirkland Hematite; Willowvale Shale; Westmoreland Hematite; Sauquoit Formation—sandstone, shale; Otsquago Sandstone; Oneida Conglomerate.

Upper Ordovician / Middle Ordovician

LORRAINE, TRENTON, AND BLACK RIVER GROUPS
up to 4,500 ft. (1400 m.)

- Oo — Oswego Sandstone
- Opw — Pulaski and Whetstone Gulf Formations—shale, siltstone.
- Of — Frankfort Formation—shale, siltstone.
- Osc — Schenectady Formation—graywacke, sandstone, siltstone, shale.
- Oag — Austin Glen Formation—graywacke, shale.
- Ou — Utica Shale.
- Oc — Canajoharie Shale.
- On — Normanskill Shale—minor mudstone, sandstone.
- Owl — Walloomsac Formation—slate, phyllite, schist, metagraywacke.
- Ot — Trenton Group. Denley, Sugar River, Kings Falls, and Rockland Limestones.
- Obr — Black River Group: Chaumont Limestone—chert; Lowville Limestone; Pamelia Dolostone.
- Otbr — Mohawk Valley: Trenton and Black River Groups—Dolgeville, Denley, Sugar River, Kings Falls, Glens Falls, Rockland, Amsterdam, and Lowville Limestones.
  Washington County: Glens Falls and Orwell Limestones.
- Oba — Balmville Limestone. Vermont: Whipple Limestone.
- Otm — Taconic Mélange—chaotic mixture of Early Cambrian thru Middle Ordovician pebble to block-size angular to rounded clasts in a pelitic matrix of Middle Ordovician (Barneveld) age. Rims and floors earlier submarine gravity slides of Taconian Orogeny.
- O€s — Cambrian thru Middle Ordovician (Barneveld) carbonate rocks occurring as slivers caught along thrusts of later allochthones, or carbonate blocks in Taconic Mélange.
- O€h — Horses along normal faults.

Lower Ordovician / Cambrian

BEEKMANTOWN AND STOCKBRIDGE GROUPS, POTSDAM SANDSTONE, AND VERMONT VALLEY SEQUENCE
up to 3,500 ft. (1100 m.)

- Obk — Beekmantown Group.
  Mohawk Valley: Chuctanunda Creek Dolostone; Tribes Hill Formation—limestone, dolostone; Gailor Dolostone.
  Washington County: Providence Island Dolostone; Fort Cassin Formation—limestone, dolostone; Fort Ann Formation—limestone, dolostone; Cutting Formation—dolostone, local chert, limestone at top, siltstone at base.
- Ow — Columbia County: Copake Formation—limestone, dolostone; Rochdale Limestone; Halcyon Lake Formation—chert, calc-dolostone.
- O€st — Stockbridge Formation—calcitic and dolomitic marble.
- O€s — slivers, as O€s above.
- €bk — Beekmantown Group.
  Mohawk Valley: Little Falls Dolostone—chert; Hoyt Formation—limestone, dolostone, oolite.
  Washington County: Whitehall Formation—dolostone, limestone; Ticonderoga Dolostone—chert.
- €w — Columbia County: Briarcliff Dolostone; Pine Plains Formation—dolostone, oolite, shale.
- €th — Theresa (Galway) Formation—dolostone, sandstone, shale.
- €p — Potsdam Sandstone.
- €wmd — Vermont: Winooski Dolostone, Monkton Quartzite, and Dunham (Rutland) Dolostone.
- €c — Cheshire Quartzite.
- €cd — Cheshire Quartzite and Dalton Formation.

PALEOZOIC — Ordovician / Cambrian

EUGEOSYNCLINAL (ALLOCHTHONOUS) SEQUENCE
up to 6,000 ft.? (2000 m.)

- Oag — Austin Glen Formation — graywacke, shale.
- Omi — Mount Merino and Indian River Formations—shale, slate, chert.
- Opl — Pillow lava at Stark's Knob near Schuylerville, Saratoga County.
- Op — North of Troy: Poultney Formation ("B" and "C" Members)—shale, slate, siltstone.
- Osf — South of Troy: Stuyvesant Falls Formation —shale, siltstone.
- O€e — Elizaville Formation—shale, argillite, quartzite.
- O€u — Undifferentiated Middle Ordovician thru Lower Cambrian (or older?) allochthonous rocks—principally pelite; lesser quartzite, limestone, conglomerate, graywacke.
- €pw — North of Troy: Poultney Formation ("A" Member)—shale, limestone; Hatch Hill Formation—shale, dolostone; West Castleton Formation—shale, limestone, conglomerate.
- €g — South of Troy: Germantown Formation—shale, conglomerate, limestone.
- ?€m — North of 43°: Mettawee Slate, includes Castleton (North Brittain) Conglomerate, Mudd Pond Quartzite, Zion Hill Quartzite, and Bomoseen Graywacke Members.
- ?€n — South of 43°: Nassau Formation—slate, shale, thin quartzite, includes Stuyvesant Conglomerate, Diamond Rock Quartzite, Curtis Mountain Quartzite, and Bomoseen Graywacke Members.
- ?€a — Austerlitz Phyllite—minor quartzite.
- ?€gt — Greenstones and tuffs and/or basalts.
- ?€r — Rensselaer Graywacke—minor shale.
- ?€ev — Everett Schist—minor meta-graywacke lenses. Includes Greylock Schist in Massachusetts.

MIDDLE PROTEROZOIC

INTRUSIVE PEGMATITE DIKES

p — Granite pegmatite dike, unmetamorphosed.

METAMORPHIC ROCKS OF IGNEOUS ORIGIN

- gb — Metagabbro, olivine metagabbro, and derived amphibolite.
- a — Metanorthosite and anorthositic gneiss; overprint signifies dark mineral content in excess of 10 percent (mainly gabbroic or noritic metanorthosite).

Relative ages of units listed below are unknown.

METAMORPHIC ROCKS OF SEDIMENTARY ORIGIN (PROBABLY INCLUDES SOME METAVOLCANICS)

- bqp — Biotite-quartz-plagioclase gneiss, amphibolite, and related migmatite; locally sillimanitic; commonly garnetiferous in and adjacent to Adirondack Highlands.
- bqpq — Biotite-quartz-plagioclase gneiss, commonly very low in biotite content, with interbedded feldspathic and biotitic quartzite and amphibolite; sillimanite and garnet common, graphite sporadic.
- garb — Quartz-feldspar gneiss with variable amounts of garnet, sillimanite, biotite.
- mb — Predominantly calcitic and dolomitic marble, variably siliceous; in part with calcsilicate rock and amphibolite.
- mu — Undivided metasedimentary rock and related migmatite.
- qt — Quartzite, quartz schist and graphitic schist; in part feldspathic, micaceous, garnetiferous, sillimanitic.

METAMORPHIC ROCKS OF UNCERTAIN ORIGIN
Mangeritic, Syenitic, Charnockitic and Quartz Syenitic Gneisses

- phgs — Charnockitic, granitic, and quartz syenitic gneisses, variably leucocratic, containing varying amounts of hornblende, pyroxenes, biotite; may contain interlayered amphibolite, metasedimentary gneiss, migmatite. Overprint signifies inequigranular texture or phacoidal structure.
- phqs — Charnockite, mangerite, pyroxene-(hornblende)-quartz syenitic gneiss; overprint signifies inequigranular texture.
- qpg — Pyroxene-hornblende-quartz-plagioclase gneiss.

Miscellaneous

- am — Amphibolite, commonly biotitic; garnetiferous, pyroxenic in and adjacent to central massif of Adirondacks.
- bg — Biotite granitic gneiss, overprint signifies inequigranular texture.
- hbg — Biotite and/or hornblende granitic gneiss, locally pyroxenic; commonly with subordinate leucogranitic gneiss, biotite-quartz-plagioclase gneiss, other metasedimentary rocks, amphibolite, migmatite. Amphibolite with porphyroblasts of K-feldspar locally prominent in northwest Adirondacks. Overprint signifies inequigranular texture or phacoidal structure. In northwest Adirondacks, grades into phg.
- lg — Leucogranitic gneiss; sodic plagioclase ranges from generally subordinate to locally dominant; locally with biotite, hornblende, pyroxene, garnet, sillimanite, disseminated magnetite; commonly contains metasedimentary layers, amphibolite, migmatite; plagioclase-rich variety is host to magnetite ore bodies in eastern Adirondacks.

UNDIVIDED AND MIXED GNEISSES

- amg — Interlayered amphibolite and granitic, charnockitic, mangeritic, or syenitic gneiss.
- mug — Interlayered metasedimentary rock and granitic, charnockitic, mangeritic, or syenitic gneiss.

MAP SYMBOLS

- Observed or approximately located contact. In Proterozoic terranes, direction of dip of bedding and/or foliation indicated by triangle.
- Conjectural contact; includes projections beneath extensive Quaternary cover and many contacts based on reconnaissance mapping.
- Hypothetical contact; projection across unmapped area.
- Fault; where known to be a normal fault, hachures on relatively downthrown side.
- Thrust or reverse fault, saw teeth on overthrust block.
- Shear zone or topographic lineament. Where mapped in detail, such lineaments are commonly found to be high angle faults with associated fault breccia.
- Antiform, showing direction of plunge (in Proterozoic terranes only).
- Synform, showing direction of plunge (in Proterozoic terranes only).
- Direction of plunge of fold axis or other linear element (in Proterozoic terranes only).
- Boundary between areas having bedrock outcrops and areas of extensive Quaternary cover.
- almandine — Isograd, dashed where inferred.

NEW YORK STATE MUSEUM AND SCIENCE SERVICE
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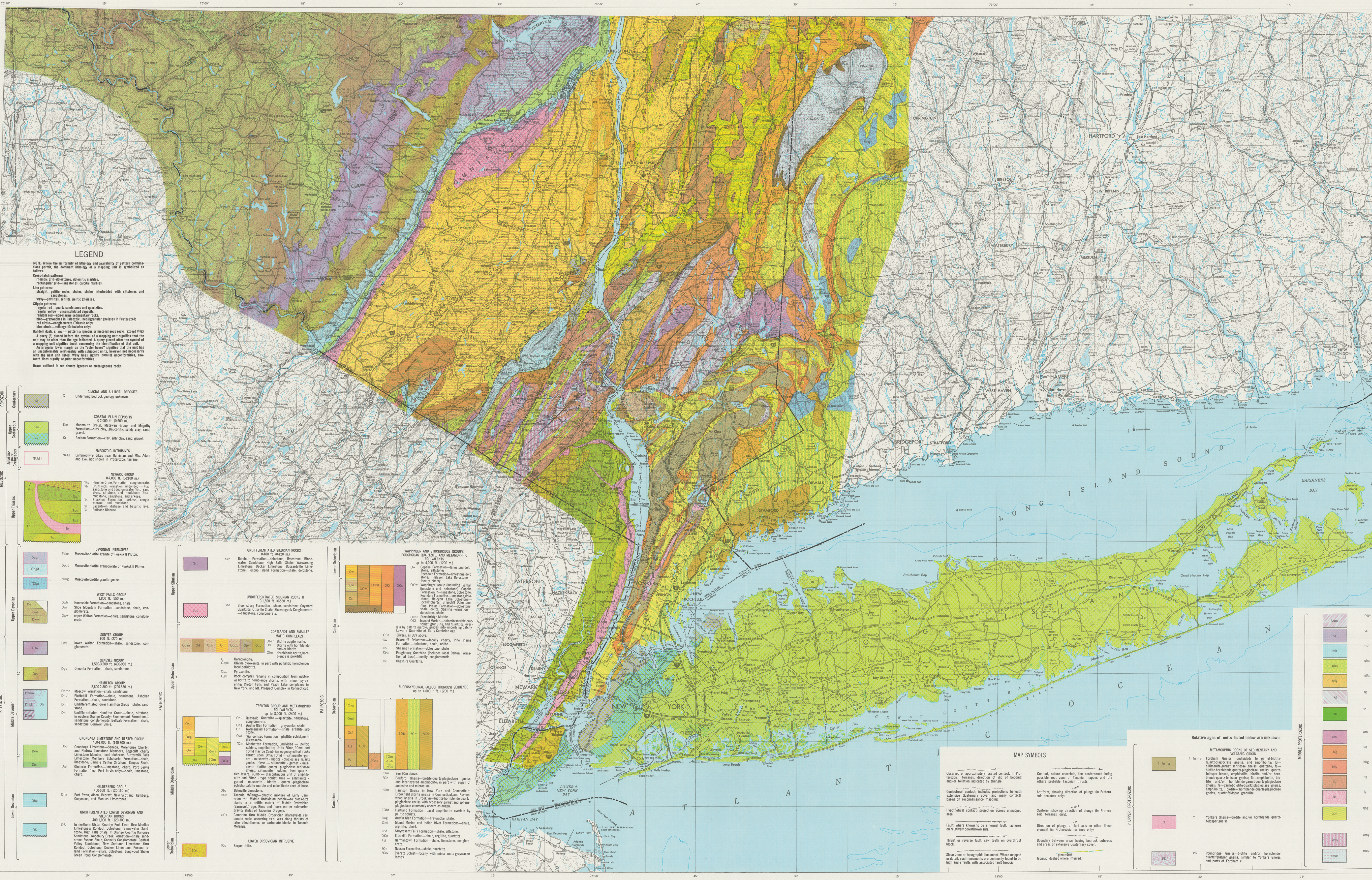
GEOLOGICAL SURVEY
James F. Davis, State Geologist



LEGEND

NOTE: Where the uniformity of lithology and availability of pattern combinations permit, the dominant lithology of a mapping unit is symbolized as follows:

Cross-hatch patterns:
- rhombic grid—dolostones, dolomitic marbles.
- rectangular grid—limestones, calcitic marbles.

Line patterns:
- straight—pelitic rocks, shales, shales interbedded with siltstones and sandstones.
- wavy—phyllites, schists, pelitic gneisses.

Stipple patterns:
- regular red—quartz sandstones and quartzites.
- regular yellow—unconsolidated deposits.
- random red—non-marine sedimentary rocks.
- blob—graywackes in Paleozoic, inequigranular gneisses in Proterozoic
- red circle—conglomerate (Triassic only).
- blue circle—mélange (Ordovician only).

Random dash, V, and + patterns: igneous or meta-igneous rocks (except mug)

A query (?) placed before the symbol of a mapping unit signifies that the unit may be older than the age indicated. A query placed after the symbol of a mapping unit signifies doubt concerning the identification of that unit.

An irregular lower margin on the "color boxes" signifies that the unit has an unconformable relationship with subjacent units, however not necessarily with the next unit listed. Wavy lines signify parallel unconformities; sawtooth lines signify angular unconformities.

Boxes outlined in red denote igneous or meta-igneous rocks.

CENOZOIC — Quaternary

GLACIAL AND ALLUVIAL DEPOSITS
- Q — Underlying bedrock geology unknown.

MESOZOIC — Upper Cretaceous

COASTAL PLAIN DEPOSITS
0-2,000 ft. (0-600 m.)
- Km — Monmouth Group, Matawan Group, and Magothy Formation—silty clay, glauconitic sandy clay, sand, gravel.
- Kr — Raritan Formation—clay, silty clay, sand, gravel.

Jurassic-Lower Cretaceous

?MESOZOIC INTRUSIVES
- ?KJd — Lamprophyre dikes near Harriman and Mts. Adam and Eve; not shown in Proterozoic terrane.

Upper Triassic

NEWARK GROUP
0-7,000 ft. (0-2100 m.)
- Ꞧhc — Hammer Creek Formation—conglomerate.
- Ꞧb — Brunswick Formation, undivided — Ꞧbg, sandstone and conglomerate; Ꞧbs, sandstone, siltstone, and mudstone; Ꞧba, mudstone, sandstone, and arkose.
- Ꞧs — Stockton Formation — arkose, conglomerate, and mudstone.
- Ꞧl — Ladentown diabase and basaltic lava.
- Ꞧp — Palisade Diabase.

PALEOZOIC — Upper Devonian

DEVONIAN INTRUSIVES
- Dpgr — Muscovite-biotite granite of Peekskill Pluton.
- Dpgd — Muscovite-biotite granodiorite of Peekskill Pluton.
- ?Dbg — Muscovite-biotite granite gneiss.

WEST FALLS GROUP
1,800 ft. (550 m.)
- Dwh — Honesdale Formation—sandstone, shale.
- Dws — Slide Mountain Formation—sandstone, shale, conglomerate.
- Dww — upper Walton Formation—shale, sandstone, conglomerate.

SONYEA GROUP
900 ft. (270 m.)
- Dsw — lower Walton Formation—shale, sandstone, conglomerate.

GENESEE GROUP
1,500-3,200 ft. (400-980 m.)
- Dgo — Oneonta Formation—shale, sandstone.

Middle Devonian

HAMILTON GROUP
2,600-2,800 ft. (790-850 m.)
- Dhmo — Moscow Formation—shale, sandstone.
- Dhpl — Plattekill Formation—shale, sandstone; Ashokan Formation—shale, sandstone.
- Dhm — Undifferentiated lower Hamilton Group—shale, sandstone.
- Dh — Undifferentiated Hamilton Group—shale, siltstone. In eastern Orange County: Skunnemunk Formation—sandstone, conglomerate; Bellvale Formation—shale, sandstone; Cornwall Shale.

ONONDAGA LIMESTONE AND ULSTER GROUP
450-1,000 ft. (140-300 m.)
- Dou — Onondaga Limestone—Seneca, Morehouse (cherty), and Nedrow Limestone Members, Edgecliff cherty Limestone Member, local bioherms, Buttermilk Falls Limestone Member; Schoharie Formation—shale, limestone; Carlisle Center Siltstone; Esopus Shale.
- Dgl — Glenerie Formation—limestone, chert; Port Jervis Formation (near Port Jervis only)—shale, limestone, chert.

Lower Devonian

HELDERBERG GROUP
400-500 ft. (120-150 m.)
- Dhg — Port Ewen, Alsen, Becraft, New Scotland, Kalkberg, Coeymans, and Manlius Limestones.

UNDIFFERENTIATED LOWER DEVONIAN AND SILURIAN ROCKS
400-1,000 ft. (120-300 m.)
- DS — In northern Ulster County: Port Ewen thru Manlius Limestones; Rondout Dolostone; Binnewater Sandstone; High Falls Shale. In Orange County: Kanouse Sandstone; Woodbury Creek Formation—shale, sandstone; Esopus Shale; Connelly Conglomerate; Central Valley Sandstone; New Scotland Limestone thru Rondout Dolostone; Decker Limestone; Poxono Island Formation—shale, dolostone; Longwood Shale; Green Pond Conglomerate.

PALEOZOIC — Upper Silurian

UNDIFFERENTIATED SILURIAN ROCKS I
0-400 ft. (0-120 m.)
- Srp — Rondout Formation—dolostone, limestone; Binnewater Sandstone; High Falls Shale; Warwarsing Limestone; Decker Limestone; Bossardville Limestone; Poxono Island Formation—shale, dolostone.

UNDIFFERENTIATED SILURIAN ROCKS II
0-1,800 ft. (0-550 m.)
- Sbs — Bloomsburg Formation—shale, sandstone; Guymard Quartzite; Otisville Shale; Shawangunk Conglomerate—sandstone, conglomerate.

Upper Ordovician

CORTLANDT AND SMALLER MAFIC COMPLEXES
- Oban — Biotite augite norite.
- Od — Diorite with hornblende and/or biotite.
- Ohn — Hornblende norite; hornblende is poikilitic.
- Oh — Hornblendite.
- Oopx — Olivine pyroxenite, in part with poikilitic hornblende; local peridotite.
- Opx — Pyroxenite.
- Ogb — Rock complex ranging in composition from gabbro or norite to hornblende diorite, with minor pyroxenite; Croton Falls and Peach Lake complexes in New York, and Mt. Prospect Complex in Connecticut.

Middle Ordovician

TRENTON GROUP AND METAMORPHIC EQUIVALENTS
up to 8,000 ft. (2400 m.)
- Oqu — Quassaic Quartzite — quartzite, sandstone, conglomerate.
- Oag — Austin Glen Formation—graywacke, shale.
- On — Normanskill Formation—shale, argillite, siltstone.
- Owl — Walloomsac Formation—phyllite, schist, metagraywacke.
- ?Om — Manhattan Formation, undivided — pelitic schists, amphibolite; Units ?Omb, ?Omc, and ?Omd may be Cambrian eugeosynclinal rocks thrust upon Oma; ?Omd — sillimanite - garnet - muscovite - biotite - plagioclase - quartz gneiss; ?Omc — sillimanite - garnet - muscovite - biotite - quartz - plagioclase schistose gneiss, sillimanite nodules, local quartz-rich layers; ?Omb — discontinuous unit of amphibolite and ?Omc - type schist; Oma — sillimanite - garnet - muscovite - biotite - quartz - plagioclase schists; calcite marble and calcsilicate rock at base.
- Oba — Balmville Limestone.
- Otm — Taconic Mélange—chaotic mixture of Early Cambrian thru Middle Ordovician pebble—to block-size clasts in a pelitic matrix of Middle Ordovician (Barneveld) age. Rims and floors earlier submarine gravity slides of Taconian Orogeny.
- O€s — Cambrian thru Middle Ordovician (Barneveld) carbonate rocks occurring as slivers along thrusts of later allochthones, or carbonate blocks in Taconic Mélange.

Lower Ordovician

LOWER ORDOVICIAN INTRUSIVE
- ?Os — Serpentinite.

PALEOZOIC — Lower Ordovician / Cambrian

WAPPINGER AND STOCKBRIDGE GROUPS, POUGHQUAG QUARTZITE, AND METAMORPHIC EQUIVALENTS
up to 4,000 ft. (1200 m.)
- Ow — Copake Formation—limestone, dolostone, siltstone; Rochdale Formation—limestone, dolostone; Halcyon Lake Dolostone — locally cherty.
- O€w — Wappinger Group (including Fishkill limestone and dolostone): Copake Formation ?—limestone, dolostone, Rochdale Formation—limestone, dolostone; Halcyon Lake Dolostone—locally cherty; Briarcliff Dolostone; Pine Plains Formation—dolostone, shale, oolite; Stissing Formation—dolostone, shale.
- O€st — Stockbridge Marble.
- O€i — Inwood Marble—dolomite marble, calc-schist, granulite, and quartzite, overlain by calcite marble; grades into underlying patchy Lowerre Quartzite of Early Cambrian age.
- O€s — Slivers, as O€s above.
- €w — Briarcliff Dolostone—locally cherty; Pine Plains Formation—dolostone, shale, oolite.
- €s — Stissing Formation—dolostone, shale
- €pg — Poughquag Quartzite (includes local Dalton Formation at base)—locally conglomeratic.
- €c — Cheshire Quartzite.

Ordovician / Cambrian

EUGEOSYNCLINAL (ALLOCHTHONOUS) SEQUENCE
up to 4,000 ? ft. (1200 m.)
- ?Om — See ?Om above.
- ?Ob — Bedford Gneiss—biotite-quartz-plagioclase gneiss and interlayered amphibolite; in part with augen of andesine and microcline.
- ?Ohr — Harrison Gneiss in New York and Connecticut, Brookfield diorite gneiss in Connecticut, and Ravenswood Gneiss in Brooklyn—biotite-hornblende-quartz-plagioclase gneiss with accessory garnet and sphene; plagioclase commonly occurs as augen.
- ?Oht — Hartland Formation—basal amphibolite overlain by pelitic schists.
- Oag — Austin Glen Formation—graywacke, shale.
- Omi — Mount Merino and Indian River Formations—shale, argillite, chert.
- Osf — Stuyvesant Falls Formation—shale, siltstone.
- O€e — Elizaville Formation—shale, argillite, quartzite.
- €g — Germantown Formation—shale, limestone, conglomerate.
- ?€n — Nassau Formation—shale, quartzite.
- ?€ev — Everett Schist—locally with minor meta-graywacke lenses.

MAP SYMBOLS

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- Conjectural contact; includes projections beneath extensive Quaternary cover and many contacts based on reconnaissance mapping.
- Hypothetical contact; projection across unmapped area.
- Fault; where known to be a normal fault, hachures on relatively downthrown side.
- Thrust or reverse fault, saw teeth on overthrust block.
- Shear zone or topographic lineament. Where mapped in detail, such lineaments are commonly found to be high angle faults with associated fault breccia.
- Contact, nature uncertain, the easternmost being possible root zone of Taconian nappes and the others probable Taconian thrusts.
- Antiform, showing direction of plunge (in Proterozoic terranes only).
- Synform, showing direction of plunge (in Proterozoic terranes only).
- Direction of plunge of fold axis or other linear element (in Proterozoic terranes only)
- Boundary between areas having bedrock outcrops and areas of extensive Quaternary cover.
- almandine — Isograd, dashed where inferred.

Relative ages of units listed below are unknown.

? UPPER PROTEROZOIC

METAMORPHIC ROCKS OF SEDIMENTARY AND VOLCANIC ORIGIN
- f fe–a — Fordham Gneiss, undivided; fe—garnet-biotite-quartz-plagioclase gneiss, and amphibolite; fd—sillimanite-garnet schistose gneiss, quartzite; fc—biotite-hornblende-quartz-plagioclase gneiss, quartz-feldspar lenses, amphibolite, biotite and/or hornblende-quartz-feldspar gneiss; fb—amphibolite, biotite and/or hornblende-garnet-quartz-plagioclase gneiss; fa—garnet-biotite-quartz-plagioclase gneiss, amphibolite, biotite—hornblende-quartz-plagioclase gneiss, quartz-feldspar granulite.
- y — Yonkers Gneiss—biotite and/or hornblende quartz-feldspar gneiss.
- pg — Poundridge Gneiss—biotite and/or hornblende-quartz-feldspar gneiss, similar to Yonkers Gneiss and parts of Fordham c.

MIDDLE PROTEROZOIC

- bqpc — Biotite-quartz-plagioclase gneiss with subordinate biotite granitic gneiss, amphibolite, calcsilicate rock.
- cs — Calcsilicate rock.
- mb — Calcitic and dolomitic marble, variably siliceous; in part with calcsilicate rock and amphibolite.
- qtcs — Garnet-biotite-quartz-feldspar gneiss, quartzite, quartz-feldspar gneiss, calcsilicate rock.
- qtlg — Garnet-bearing gneiss and interlayered quartzite; contains varying amounts of biotite, garnet, sillimanite; minor marble, amphibolite, rusty paragneiss.
- rg — Rusty and gray biotite-quartz-feldspar gneisses; rusty facies contains variable amounts of garnet, sillimanite, cordierite, graphite, sulfides; minor marble and calcsilicate rock.
- sc — Sillimanite - cordierite - almandine - biotite - quartz - feldspar gneiss.

METAMORPHIC ROCKS OF UNCERTAIN ORIGIN
- am — Amphibolite, pyroxenic amphibolite, hornblende gneiss, commonly biotitic, garnetiferous; subordinate calcsilicate rock.
- bg — Biotite granitic gneiss; overprint signifies inequigranular texture.
- bhg — Biotite-hornblende granite and granitic gneiss.
- hg — Hornblende granite and granitic gneiss, with subordinate leucogranite
- lg — Leucogranitic gneiss.
- qpg — Quartz plagioclase gneiss; may contain pyroxenes, hornblende, biotite; locally interlayered with amphibolite; subordinate biotite mesoperthite gneiss.

UNDIVIDED AND MIXED GNEISSES
- amg — Interlayered amphibolite and hornblende granitic gneiss.
- mug — Interlayered metasedimentary rock and granitic gneiss.

Topographic Base from AMS Quadrangles 1:250,000 scale.
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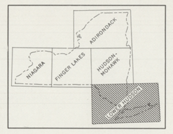
MAP AND CHART SERIES NO. 15



GEOLOGIC MAP OF NEW YORK

1970
Reprinted 1995

Lower Hudson Sheet

Scale 1:250,000
5 0 5 10 15 Statute Miles 20
5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET

COMPILED AND EDITED BY
Donald W. Fisher
Yngvar W. Isachsen
Lawrence V. Rickard
March, 1970

Williams & Heintz Map Corporation, Capitol Heights, Md. 20743

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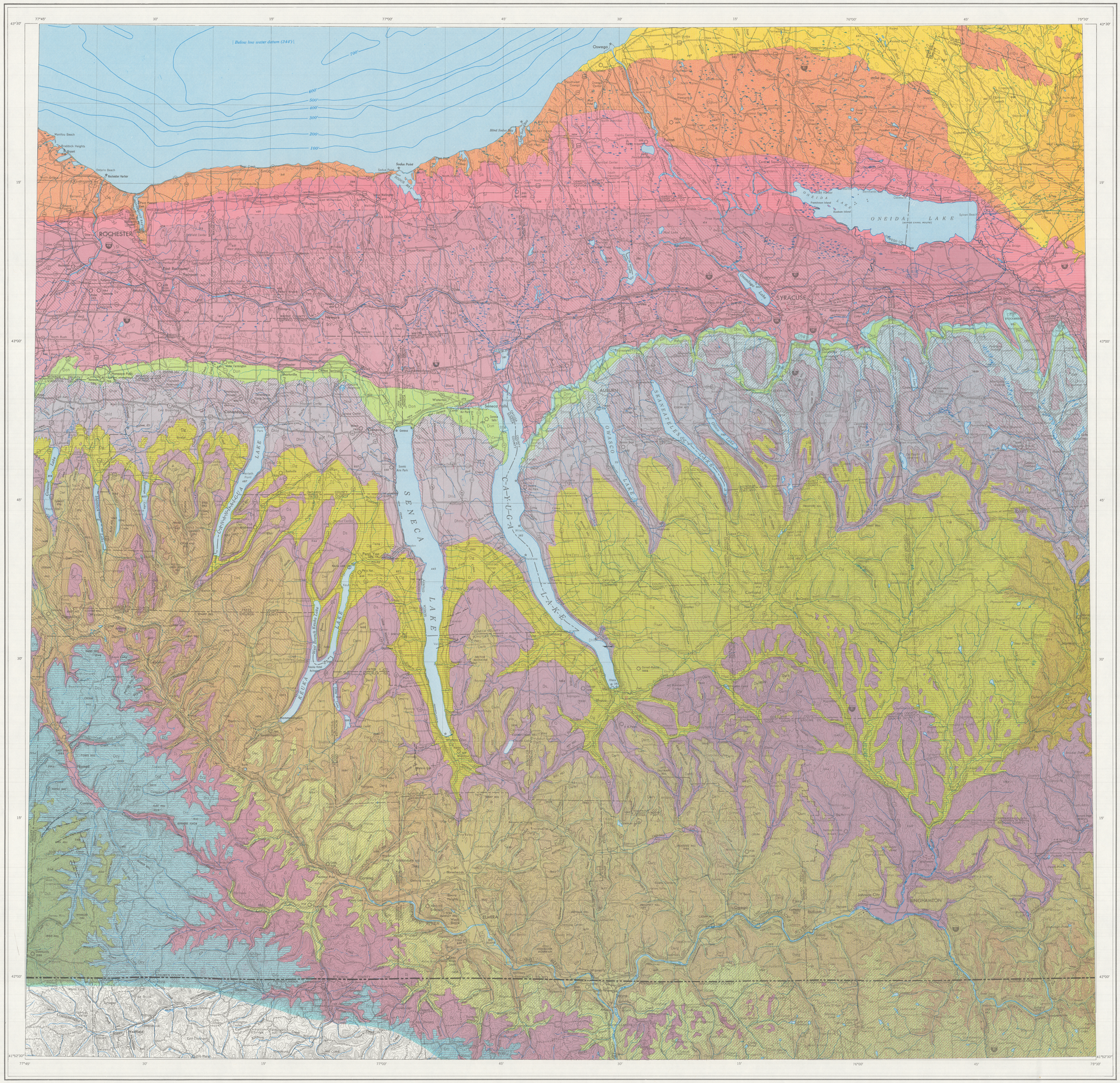

LEGEND

NOTE: Where the uniformity of lithology and availability of pattern combinations permit, the dominant lithology of a mapping unit is symbolized as follows:

Cross-hatch patterns:
rhombic grid—dolostones
rectangular grid—limestones

Line patterns:
straight—pelitic rocks, shales, shales interbedded with siltstones and sandstones

Stipple patterns:
regular red—quartz sandstones and quartzites
random red—non-marine sedimentary rocks

An irregular lower margin on the "color boxes" signifies that the unit has an unconformable relationship with subjacent units, however not necessarily with the next unit listed. Wavy lines signify parallel unconformities; saw-tooth lines signify angular unconformities.

Box outlined in red denotes igneous rocks

MESOZOIC — Lower Cretaceous

KJk — MESOZOIC INTRUSIVES
KJk Kimberlite and alnoite dikes and diatremes.

Dct — CONNEAUT GROUP
600-1000 ft. (180-300 m.)
Dct Germania Formation—shale, sandstone; Whitesville Formation—shale, sandstone; Hinsdale Sandstone; Wellsville Formation—shale, sandstone; Cuba Sandstone.

Dcy — CANADAWAY GROUP
800-1200 ft. (240-370 m.)
Dcy Machias Formation—shale, siltstone; Rushford Sandstone; Caneadea, Canisteo, and Hume Shales; Canaseraga Sandstone; South Wales and Dunkirk Shales; In Pennsylvania: Towanda Formation—shale, sandstone.

Dj — JAVA GROUP
300-700 ft. (90-210 m.)
Dj Wiscoy Formation—sandstone, shale; Hanover and Pipe Creek Shales.

PALEOZOIC — Upper Devonian

Dwn, Dwc, Dwg, Dws, Dwm — WEST FALLS GROUP
1100-1600 ft. (340-490 m.)
Dwn Nunda Formation—sandstone, shale.
Dwg West Hill and Gardeau Formations—shale, siltstone; Roricks Glen Shale; upper Beers Hill Shale; Grimes Siltstone.
Dwr lower Beers Hill Shale; Dunn Hill, Millport, and Moreland Shales.
Dwc Nunda Formation—sandstone, shale; West Hill Formation—shale, siltstone; Corning Shale.
Dwnm "New Milford" Formation—sandstone, shale.
Dwg Gardeau Formation—shale, siltstone; Roricks Glen Shale.
Dws Slide Mountain Formation—sandstone, shale, conglomerate.
Dwm Beers Hill Shale; Grimes Siltstone; Dunn Hill, Millport, and Moreland Shales

Ds — SONYEA GROUP
200-1000 ft. (60-300 m.)
Ds In west: Cashaqua and Middlesex Shales.
In east: Rye Point Shale; Rock Stream ("Enfield") Siltstone; Pulteney, Sawmill Creek, Johns Creek, and Montour Shales.

Dgo, Dg, Dgu, Dt — GENESEE GROUP AND TULLY LIMESTONE
200-1000 ft. (60-300 m.)
Dg West River Shale; Genundewa Limestone; Penn Yan and Geneseo Shales; all except Geneseo replaced eastwardly by Ithaca Formation—shale, siltstone and Sherburne Siltstone.
Dgo Oneonta Formation—shale, sandstone.
Dgu Unadilla Formation—shale, siltstone.
Dt Tully Limestone.

Middle Devonian

Dhmo, Dhid, Dhsk, Dhmr, Dhpm — HAMILTON GROUP
600-1500 ft. (180-460 m.)
Dhmo Moscow Formation—In west: Windom and Kashong Shales, Menteth Limestone Members; In east: Cooperstown Shale Member, Portland Point Limestone Member.
Dhid Ludlowville Formation—In west: Deep Run Shale, Tichenor Limestone, Wanakah and Ledyard Shale Members, Centerfield Limestone Member. In east: King Ferry Shale and other members, Stone Mill Sandstone Member.
Dhsk Skaneateles Formation—In west: Levanna Shale and Stafford Limestone Members; In east: Butternut, Pompey, and Delphi Station Shale Members, Mottville Sandstone Member.
Dhmr Marcellus Formation—In west: Oakta Creek Shale Member; In east: Cardiff and Chittenango Shale Members, Cherry Valley Limestone and Union Springs Shale Members.
Dhpm Panther Mountain Formation—shale, siltstone, sandstone.

Don, Do — ONONDAGA LIMESTONE AND ORISKANY SANDSTONE
75-150 ft. (23-45 m.)
Don Onondaga Limestone—Seneca, Morehouse (cherty) and Nedrow Limestone Members, Edgecliff cherty Limestone Member, local bioherms.
Do Oriskany Sandstone.

Lower Devonian

Dhg — HELDERBERG GROUP
0-200 ft. (0-60 m.)
Dhg Coeymans and Manlius Limestones; Rondout Dolostone.

Upper Silurian

Sab, Scc, Scy, Ssy, Sv — AKRON DOLOSTONE, COBLESKILL LIMESTONE, AND SALINA GROUP
700-1000 ft. (210-300 m.)
Sab Akron Dolostone; Bertie Formation—dolostone, shale.
Scy Camillus and Syracuse Formations—shale, dolostone, gypsum, salt.
Scc Cobleskill Limestone; Bertie and Camillus Formations—dolostone, shale.
Ssy Syracuse Formation—dolostone, shale, gypsum, salt.
Sv Vernon Formation—shale, dolostone.

Sl — LOCKPORT GROUP
80-175 ft. (25-55 m.)
Sl Oak Orchard and Penfield Dolostones, both replaced eastwardly by Sconondoa Formation—limestone, dolostone.

Lower Silurian

Sr, Sik, Scl — CLINTON GROUP
150-325 ft. (40-100 m.)
Sr Decew Dolostone; Rochester Shale.
Sik Irondequoit Limestone; Williamson Shale; Wolcott Furnace Hematite; Wolcott Limestone; Sodus Shale; Bear Creek Shale; Wallington Limestone; Furnaceville Hematite; Maplewood Shale; Kodak Sandstone.
Scl Herkimer Sandstone; Kirkland Hematite; Willowvale Shale; Westmoreland Hematite; Sauquoit Formation—sandstone, shale; Oneida Conglomerate.

Upper Ordovician

Sm, SmOq, Oq — MEDINA GROUP AND QUEENSTON FORMATION
0-900 ft. (0-270 m.)
Sm Medina Group: Grimsby Formation—sandstone, shale.
Oq Queenston Formation—shale, siltstone.
SmOq Undifferentiated Medina Group and Queenston Formation.

Oo, Opw — LORRAINE GROUP
700-900 ft. (210-270 m.)
Oo Oswego Sandstone.
Opw Pulaski and Whetstone Gulf Formations—siltstone, shale.

Ou — TRENTON GROUP
100-300 ft. (30-90 m.)
Ou Utica Shale.

Middle Ordovician

MAP SYMBOLS

Observed or approximately located contact.

Conjectural contact; includes projections beneath extensive Quaternary cover and many contacts based on reconnaissance mapping.

Hypothetical contact; projection across unmapped area.

Inferred normal fault; hachures on relatively downthrown side.

Thrust or reverse fault; saw teeth on relatively overthrust block.

Topographic Base from AMS Quadrangles 1:250,000 scale.
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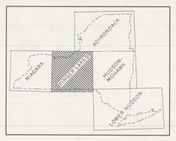

GEOLOGIC MAP OF NEW YORK
1970
Finger Lakes Sheet

Scale 1:250,000
5 0 5 10 15 Statute Miles 20
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CONTOUR INTERVAL 100 FEET

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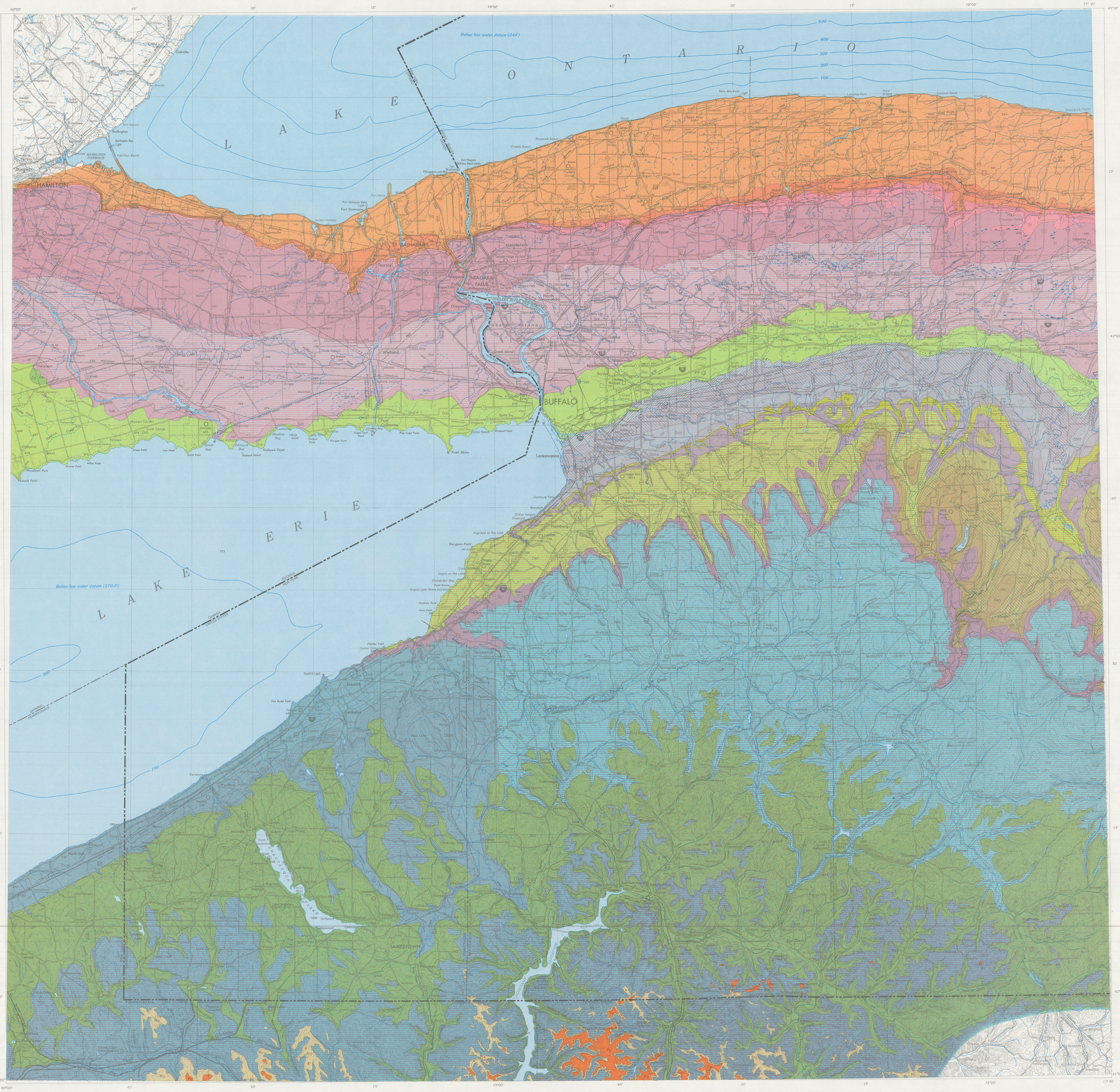

LEGEND

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- random red—non-marine sedimentary rocks

An irregular lower margin on the "color boxes" signifies that the unit has an unconformable relationship with subjacent units, however not necessarily with the next unit listed. Wavy lines signify parallel unconformities; sawtooth lines signify angular unconformities.

PALEOZOIC

Lower Pennsylvanian

POTTSVILLE GROUP
Pp — Connoquenessing Formation—sandstone, shale; Sharon Formation—shale, sandstone, conglomerate; Olean Conglomerate 50-100 ft. (15-30 m.)

Lower Mississippian

POCONO GROUP
Mp — Cuyahoga Formation—shale, sandstone; Corry Sandstone; Knapp Formation 60-100 ft. (20-30 m.)—shale, conglomerate.

Upper Devonian

CONEWANGO GROUP
450-650 ft. (140-200 m.)
Dco — Oswayo and Venango Formations—shale, siltstone, sandstone; replaced eastwardly by Cattaraugus Formation—shale, sandstone, conglomerate.

CONNEAUT GROUP
250-600 ft. (75-200 m.)
Dct — In west: Ellicott and Dexterville Formations—shale, siltstone.
In east: Germania Formation—shale, sandstone; Whitesville Formation—shale, sandstone; Hinsdale Sandstone; Wellsville Formation—shale, sandstone; Cuba Sandstone.

CANADAWAY GROUP
700-1200 ft. (210-370 m.)
Dcys — Northeast Shale; Shumla Siltstone.
Dcyl — Westfield Shale; Laona Siltstone.
Dcyd — Gowanda, South Wales, and Dunkirk Shales.
Dcy — Machias Formation—shale, siltstone; Rushford Sandstone; Caneadea, Canisteo, and Hume Shales; Canaseraga Sandstone; South Wales and Dunkirk Shales.

JAVA GROUP
100-200 ft. (30-60 m.)
Dj — Hanover Shale; Wiscoy Formation—sandstone, shale; Pipe Creek Shale.

WEST FALLS GROUP
400-950 ft. (120-290 m.)
Dwf — Angola and Rhinestreet Shales.
Dwn — Nunda Formation—sandstone, shale.
Dwg — West Hill and Gardeau Formations—shale, siltstone; Rooricks Glen Shale; upper Beers Hill Shale; Grimes Siltstone.
Dwr — lower Beers Hill Shale; Dunn Hill, Millport, and Moreland Shales.

SONYEA GROUP
50-200 ft. (15-60 m.)
Ds — Cashaqua and Middlesex Shales.

GENESEE GROUP
10-150 ft. (3-45 m.)
Dg — West River Shale; Genundewa Limestone; Penn Yan and Geneseo Shales; North Evans Limestone.

Middle Devonian

HAMILTON GROUP
200-500 ft. (60-150 m.)
Dhmo — Moscow Formation—Windom and Kashong Shales, Menteth Limestone Members.
Dhld — Ludlowville Formation—Deep Run Shale, Tichenor Limestone, Wanakah and Ledyard Shales, Centerfield Limestone Members.
Dhsk — Skaneateles Formation—Levanna Shale, Stafford Limestone Members.
Dhmr — Marcellus Formation—Oatka Creek Shale Member.

Lower Devonian

ONONDAGA AND BOIS BLANC LIMESTONES
150 ft. (45 m.)
Dob — In New York: Onondaga Limestone—Seneca, Morehouse (cherty), and Clarence Limestone Members, Edgecliff cherty Limestone Member, local coral bioherms; Bois Blanc Limestone—sandy, thin, discontinuous.
In Ontario: Dundee Limestone; Lucas Formation—dolostone, limestone (Anderdon); Amherstburg Formation—limestone, dolostone, sandstone (Sylvania); Bois Blanc Formation—dolostone, limestone, sandstone (Springvale).
Do — Oriskany Sandstone.

Upper Silurian

AKRON DOLOSTONE AND SALINA GROUP
400-700 ft. (120-210 m.)
Sab — Akron Dolostone; Bertie Formation—dolostone, shale.
Scv — Camillus, Syracuse, and Vernon Formations—shale, dolostone, salt, and gypsum.

LOCKPORT GROUP
150-200 ft. (45-60 m.)
Sl — Guelph, Oak Orchard, Eramosa, and Goat Island Dolostones; Gasport Limestone—local bioherms.

Lower Silurian

CLINTON GROUP
100-150 ft. (30-45 m.)
Scl — Decew Dolostone; Rochester Shale; Irondequoit and Merriton Limestones.
Sr — Decew Dolostone; Rochester Shale.
Sik — Irondequoit Limestone; Rockway Dolostone; Hickory Corners Limestone; Neahga Shale; Kodak Sandstone.

MEDINA GROUP AND QUEENSTON FORMATION
800 ft. (250 m.)
Sm — Thorold Sandstone; Grimsby Formation—sandstone, shale; Power Glen and Cabot Head Shales; Whirlpool Sandstone.

Upper Ordovician

Oq — Queenston Shale.

MAP SYMBOLS

Observed or approximately located contact

Conjectural contact; includes projections beneath extensive Quaternary cover and many contacts based on reconnaissance mapping.

Hypothetical contact; projection across unmapped area.

Topographic Base from AMS Quadrangles 1:250,000 scale.
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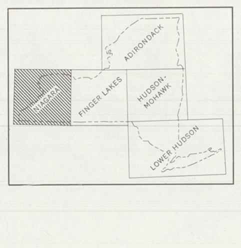
MAP AND CHART SERIES NO. 15



GEOLOGIC MAP OF NEW YORK

1970

Niagara Sheet

Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET

COMPILED AND EDITED BY
Lawrence V. Rickard
Donald W. Fisher
March, 1970

Williams & Heintz Map Corporation, Capitol Heights, Md. 20743