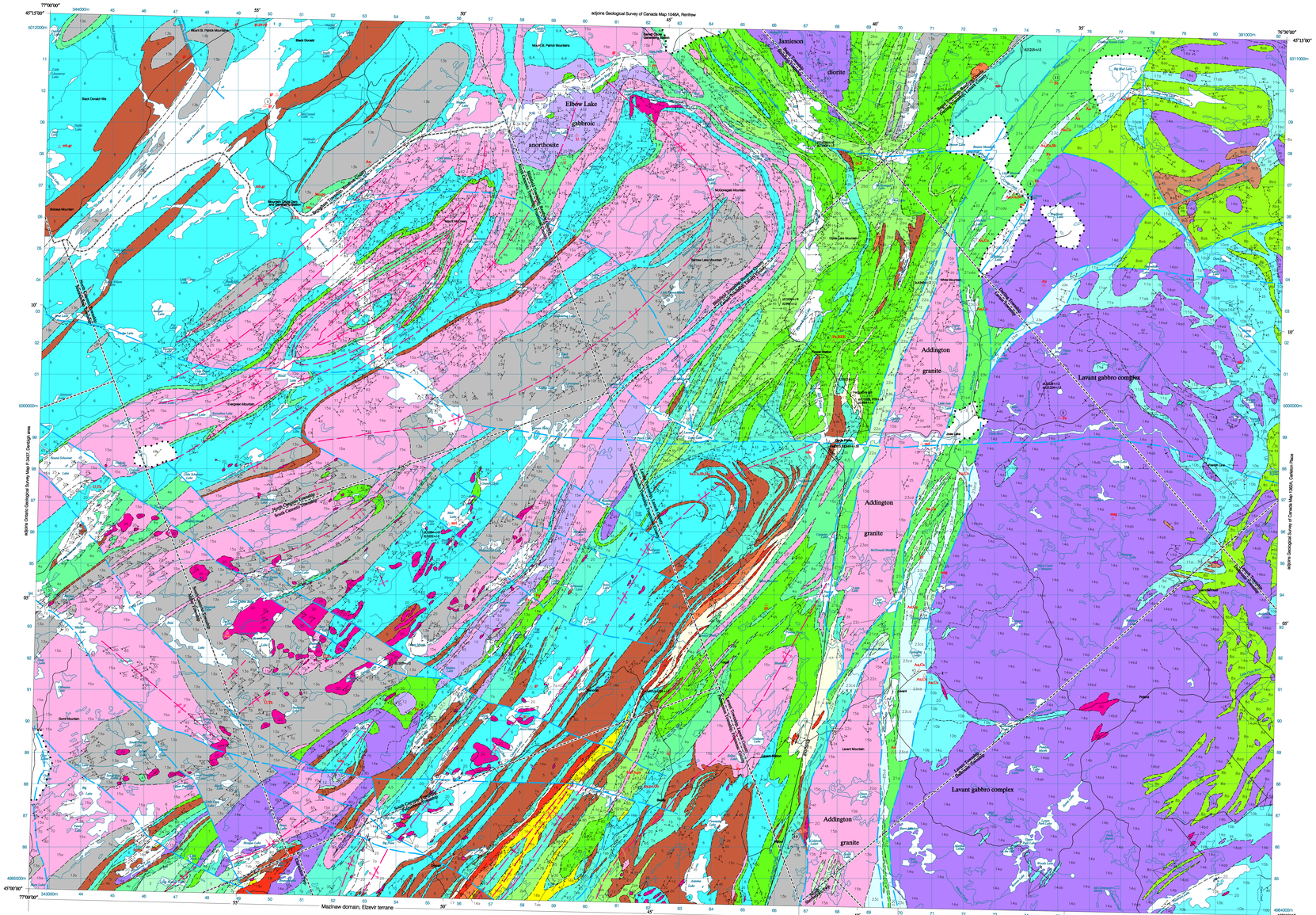


LEGEND

PHANEROZOIC

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT

Sand, gravel, mainly glaciofluvial deposits, till, ground moraines and organic deposits

UNCONFORMITY

PALEOZOIC

MIDDLE ORDOVICIAN

25 Chemical Sedimentary Rocks (Gull River Formation): Pale grey and brown, sublithographic to lithographic limestone, minor dolostone

UNCONFORMITY

PRECAMBRIAN[a,b,c]

NEOPROTEROZOIC

24 Grenville Dike Swarm (590 Ma): Fine- to medium-grained diabase

INTRUSIVE CONTACT

ROBERTSON LAKE MYLONITE ZONE (RLMZ) (units 21 to 23)

23 Carbonate Rocks (Massive and Mylonitic):
23a Calcitic mylonite and protomylonite
23b Dolomitic mylonite and protomylonite
23c Brown-weathering, massive dolomite
23d Areas of extensive carbonate veining and alteration; may include up to 50% units 21 and 22

FAULTED CONTACT

22 Felsic Ultra- and Protomylonites:
22a Felsic ultramylonite and protomylonite derived from unit 15 and 13
22b Felsic ultramylonite and protomylonite derived from siliceous clastic metasedimentary rocks
22c Felsic ultramylonite and protomylonite of unknown protolith; includes felsites

FAULTED CONTACT

21 Mafic Ultra- and Protomylonites:
21a Mafic ultramylonite and protomylonite derived from gabbro
21b Mafic ultramylonite and protomylonite derived from mafic metavolcanic rocks
21c Mafic ultramylonite and protomylonite of unknown protolith
21d Mixed assemblage of mafic mylonite and carbonate veins, carbonate pods and lenses
21e As unit 21d, but consisting of amphibolite and diorite derived from the Elzevir Terrane

FAULTED CONTACT

MESOPROTEROZOIC

20 Potassic Pegmatitic Intrusive Rocks (1020–1170 Ma): Pink-weathering, pyrite to pyrrhotite-bearing pegmatite veins; locally may contain tourmaline or muscovite, or both

Metasedimentary Rocks of the Flinton Group (>1020 Ma, <1155 Ma)

19 Fermleigh Formation: Biotite-clinopyroxene-hornblende schist and high grade equivalents

18 Meyer Cave Formation: Black- or rusty-weathering, graphite-pyrite-biotite schist and higher-grade equivalents; commonly garnet and sillimanite bearing

17 Bishop Corners Formation: Muscovite-rich metapelite, minor muscovite-bearing meta-arenite

16 Ompah Formation:
16a Polymictally derived, heterolithic metaconglomerate
16b Meta-arenite, calcareous meta-arenite
16c Hornblende ± garnet, pelitic to semi-pelitic gneiss and schist (possibly equivalent to Ore Chimney Formation)
16d Metaconglomerate consisting of granite cobbles (unit 15) in a carbonate-diopside-mica matrix

UNCONFORMITY?

Mathuen Suite[d] (1240– 1250 Ma)

15 Felsic Intrusive Rocks:
15a Medium-grained, gneissic to migmatitic monzogranite; commonly cut by granite pegmatite veins (unit 20)
15b Fine- to medium-grained monzogranite; commonly lineated or foliated, or both; commonly cut by granite pegmatite veins (unit 20); locally sheared to mylonitic
15c Fine- to medium-grained biotite-muscovite monzogranite; commonly lineated or foliated, or both
15d Medium-grained, gneissic granodiorite to quartz diorite
15e Fine- to medium-grained granitoid gneiss
15f Medium-grained, potassium feldspar megacrystic monzogranitic; locally grades into augen gneiss

INTRUSIVE CONTACT

Lavant Suite[d] (1240– 1250 Ma)

14 Mafic to Intermediate Intrusive Rocks:
14a Fine- to medium-grained gabbro
14b Fine- to medium-grained diorite
14c Medium-grained, foliated to gneissic gabbro, anorthositic gabbro, gabbroic anorthosite
14d Fine- to medium-grained tonalite and granodiorite
14e Fine- to medium-grained gabbro; foliated to gneissic
14f Grossular-diopside skarn rock

INTRUSIVE CONTACT

Elzevir Suite[d] (1250– 1270 Ma)

13 Intermediate Intrusive Rocks
13a Medium-grained, grey-weathering, migmatitic tonalite to granodioritic gneiss; locally cut by granite pegmatite veins (unit 20)
13b Medium-grained, grey-weathering, foliated to gneissic tonalite to trondhjemite

INTRUSIVE CONTACT

Killer Creek Suite[d] (>1270 Ma)

12 Mafic Intrusive Rocks:
Medium-grained, foliated to gneissic gabbro, minor foliated to gneissic anorthositic gabbro, gabbroic anorthosite, and hornblendite

INTRUSIVE CONTACT

Greenschist to Granulite Facies Metamorphism in Sharbot Lake Domain between 1160–1165 Ma

SHARBOT LAKE DOMAIN (units 8 to 11) (GRENVILLE SUPERGROUP)

METASEDIMENTARY ROCKS

11 Dolomitic Carbonate Metasedimentary Rocks
11a Dolomite marble; massive
11b Dolomite marble with quartz-tremolite pods and layers
11c Interbedded calcite and dolomite marble

10 Calcitic Carbonate Metasedimentary Rocks
10a Medium- to coarse-grained, white calcite marble; massive; may include some dolomite marble horizons and zones of buff-weathering dolomitization
10b Medium- to coarse-grained, white calcite marble; massive, locally layered
10c Fine- to medium-grained, grey calcite marble; bedded

9 Siliceous Clastic Metasedimentary Rocks
9a Metawacke, metasiltstone
9b Pyrrhtenous slates, metasiltstone, felsite; may include some volcanic component; generally rusty weathering
9c Sulphide facies iron formation
9d Meta-arenite

METAVOLCANIC ROCKS

8 Tholeiitic Mafic Metavolcanic Rocks
8a Amphibolite; generally fine grained; likely derived from basaltic flows and tuffs
8b Amphibolite; generally fine grained; likely derived from basaltic to intermediate tuffs and volcanic breccia
8c Amphibolite; generally fine grained; lacking any primary volcanic textures
8d Unit 8a, pillowed

Greenschist to Upper Amphibolite Facies Metamorphism in Mazinaw Domain between 1040–1020 Ma

FAULTED CONTACT

MAZINAW DOMAIN (units 1 to 7) (GRENVILLE SUPERGROUP)

METASEDIMENTARY ROCKS

7 Dolomitic Carbonate Metasedimentary Rocks:
7a Dolomite marble; generally medium to coarse grained and massive; may include zones of calc-silicate assemblages (e.g., tremolite, diopside), and minor interlayered siliceous clastic metasedimentary rocks (unit 5)
7b Siliceous dolomite marble with quartz-tremolite segregations; locally containing algal-mat stromatolites

6 Calcitic Carbonate Metasedimentary Rocks:
6a Calcite marble; generally medium to coarse grained and massive; locally layered; may include zones with intact or boudinaged layers of siliceous clastic metasedimentary rocks (unit 4 and 5)
6b Marble, interlayered with unit 4

5 Siliceous Clastic Metasedimentary Rocks:
Biotite-quartzofeldspathic gneiss; fine grained, 10 to 35% biotite; mainly derived from metawacke, minor metapelite and rusty schist; minor metaquartzarenite horizons

4 Siliceous Clastic Metasedimentary Rocks (may include felsic and intermediate metatuffs and metasedimentary rocks of mainly volcanic provenance):
4a Biotite-hornblende-quartz-plagioclase gneiss ("para-amphibolite") and hornblende-plagioclase gneiss; with layers of unit 1 or 2 present locally
4b Biotite-hornblende-quartz-plagioclase gneiss ("para-amphibolite"), hornblende-plagioclase gneiss, and quartzofeldspathic gneiss; commonly garnet bearing; may include layers of unit 1 or 3

METAVOLCANIC ROCKS

3 Tholeiitic Mafic to Felsic Metavolcanic Rocks (Mazinaw Lake Formation and Equivalents) (1240– 1250 Ma):
Dominantly quartzofeldspathic schist and gneiss, likely derived from intermediate to felsic flows and tuffs; minor interlayered mafic schist and gneiss, likely derived from mafic flows and tuffs

2 Calc-Alkalic Mafic to Felsic Metavolcanic Rocks
Kashwakamak Formation and Equivalents) (1265–1280 Ma)
2a Dominantly amphibolite and mafic gneiss, likely derived from basaltic to andesitic flows and tuffs
2b Dominantly quartzofeldspathic schist and gneiss, likely derived from intermediate to felsic flows and tuffs

1 Tholeiitic Mafic Metavolcanic Rocks (Tudor Formation and Equivalents) (>1265 Ma):
Amphibolite, garnet amphibolite and mafic gneiss, likely derived from basaltic flows and tuffs

[a] The Precambrian legend is a lithotectonic one, and stratigraphic order is only in part implied by numerical order.
[b] All Precambrian rocks have been subjected to regional metamorphism; many non-metamorphic terms are used for the sake of brevity and where the protolith is established.
[c] Location of Sharbot Lake–Mazinaw domain boundaries is approximate. Consequently, assignment of rock units to a specific domain or terrane within 300 metres of these boundaries should be regarded with caution.
[d] Igneous rock suites and their ages are adapted from Lumbers et al. (1990) and Easton (1992).

SYMBOLS

- Geological contact, interpreted
- Fault, interpreted
- Unconformity, trend only, interpreted
- Denotes areas of extensive drift through which geological contacts cannot be reliably extrapolated
- Bedding, facing unknown (inclined, vertical)
- Compositional layering and/or parallel tectonic foliation, unknown generation (inclined, vertical)
- Foliation, unknown generation (inclined, vertical)
- Lineation, with plunge
- Isograd, muscovite-out; text on high-grade side
- A1/338+12 Location of isotopic age determination, age in Ma
- Antiform, unknown generation, limbs dip in opposite direction, interpreted
- Antiform, first generation, limbs dip in opposite direction, interpreted
- Synform, first generation, limbs dip in opposite direction, interpreted
- Antiform, second generation, limbs dip in opposite direction, interpreted
- Synform, second generation, limbs dip in opposite direction, interpreted
- Antiform, second generation, limbs dip in same direction, interpreted
- Synform, second generation, limbs dip in same direction, interpreted
- Mineral occurrence (number corresponds with "Past-Producers and Properties" list)

ABBREVIATIONS

Au	gold	mi	mica
ba	barite	mrl	marl
cp	chalcopyrite	Mo	molybdenum
Cu	copper	py	pyrite
Fe	iron	REE	rare earth elements
fel	feldspar	Sb	antimony
gr	graphite	SM	sulphide mineralization
Hg	mercury	Th	thorium
mag	magnetite	U	uranium
mb	marble		

bA	biotite Ar-Ar date, in Ma
hA	hornblende Ar-Ar date, in Ma
mA	muscovite Ar-Ar date, in Ma
bK	biotite K-Ar date, in Ma
HK	hornblende K-Ar date, in Ma
mU	monazite U-Pb date, in Ma
tU	titanite U-Pb date, in Ma
zU	zircon U-Pb date, in Ma

PAST-PRODUCERS AND PROPERTIES

1. Black Donald Mine (gr) (now submerged)
2. Blithfield Pyrite Mine (py, S)
3. Clyde Forks Deposit (ba, Cu, Sb, Hg)
4. Darling Iron (Fe)
5. Levant Iron (Fe)
6. Little Green Lake (Au, Cu, Sb)
7. Mosque Lake (Victory Talc (talc)
8. Raclenhurst–Caldwell Mine (Fe, REE)
9. Summit Lake (Fe)
10. Wilbur Iron Mine (Fe)
11. Yuill Iron Mine (Fe)

SOURCES OF INFORMATION

Thematic information on this map is tied to a digital base map derived from map 31 F/2 of the National Topographic System, scale 1:50 000. UTM co-ordinates are in NAD27 datum, zone 18.

Busch, J.P. 1996. Terrane accretion and orogenic extension along the Robertson Lake shear zone, Grenville orogen, Canada; unpublished PhD thesis, University of Michigan, Ann Arbor, Michigan, 147p.

Corfu, F. and Easton, R.M. 1995. U-Pb geochronology of the Mazinaw Terrane, an imbricate segment of the Central Metasedimentary Belt, Grenville Province, Ontario; Canadian Journal of Earth Sciences, v.32, p.959-967.

Easton, R.M. and deKemp, E.A. 1988. Precambrian geology of the Darling area, Ontario Geological Survey, Preliminary Map P.3313, scale 1:15 840.

Easton, R.M. 1992. The Grenville Province; *in* Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 2, p.713-904.

Easton, R.M., Ford, F.D. and Cooke, M.A. 1995. Geology of the Palmerston Lake area; Ontario Geological Survey, Preliminary Map P.3335, scale 1:20 000.

Karboski, F. 1980. Structure and stratigraphy of the Norcan Lake area, Grenville Province, southeastern Ontario; unpublished MSc thesis, Carleton University, Ottawa, Ontario, 100p.

Lumbers, S.B. 1982. Renfrew; Ontario Geological Survey, Map 2462, scale 1:100 000.

Lumbers, S.B., Heaman, L.M., Vertolli, V.M. and Wu, T.W. 1990. Nature and timing of Middle Proterozoic magmatism in the Central Metasedimentary Belt, Grenville Province, Ontario; *in* Mid-Proterozoic Laurentia-Baltica, Geological Association of Canada, Special Paper 38, p.243-276.

Mezger, K., Essene, E.J., van der Pluijm, B.A. and Halliday, A.N. 1993. U-Pb geochronology of the Grenville Orogen of Ontario and New York: constraints on ancient crustal tectonics; Contributions to Mineralogy and Petrology, v.114, p.13-26.

Pauk, L. 1989. Lavant area; Ontario Geological Survey, Map 2515, scale 1: 31 680.

Wanless, R.K., Stevens, R.D., Lachance, G.R. and Delabio, R.N. 1973. Age determinations and geological studies – K-Ar isotopic ages, Report 11; Geological Survey of Canada, Paper 73-2, 139p.

Magnetic declination approximately 13°16'W in 2001.

Geology not tied to surveyed lines.

Metric conversion factor: 1 foot = 0.3048 m.

CREDITS

Geology of southwest and northeast corners by R.M. Easton, 1992 and 1997, respectively. Geology of eastern and central corner largely from Pauk (1989). Geology of northwest corner largely from Karbosiki (1980), Lumbers (1982) and Easton, unpublished data.

Geological compilation by R.M. Easton, 2000-2001.

Digital drafting by E. Murphy and R.M. Easton.

Issued 2001.

Easton, R.M. 2001. Precambrian geology, Clyde Forks area; Ontario Geological Survey, Preliminary Map P.3438, scale 1:50 000.

Ontario

Ontario Geological Survey

MAP P.3438

PRECAMBRIAN GEOLOGY

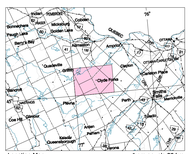
CLYDE FORKS AREA

Scale 1:50 000

1000 m 0 1 2 km

NTS Reference: 31 F/2

This map is published with the permission of the Senior Manager, Precambrian Geoscience Section, Ontario Geological Survey.



1 cm equals 20 km