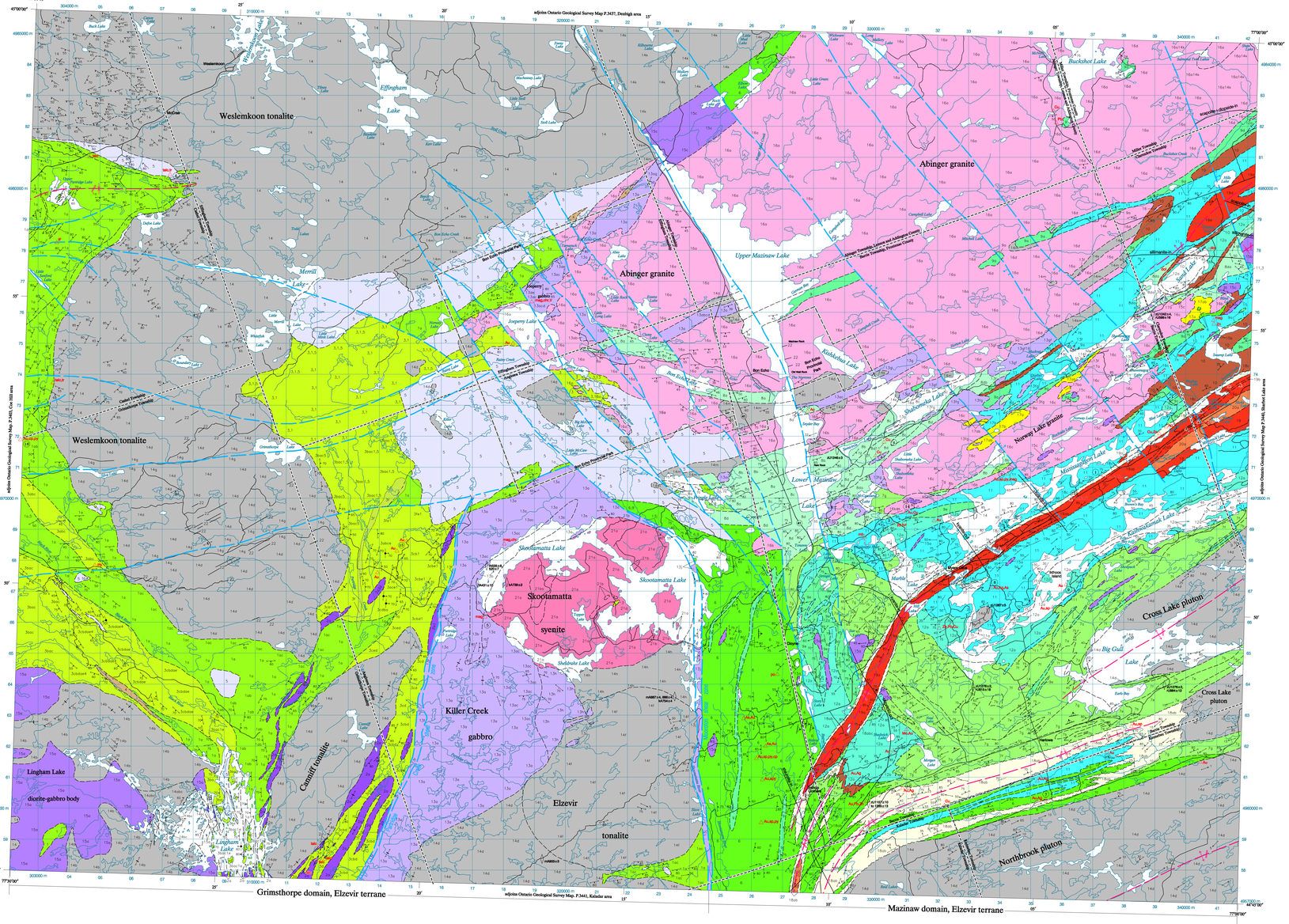

LEGEND

PHANEROZOIC

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT

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

UNCONFORMITY

PRECAMBRIAN[ab]

MESOPROTEROZOIC

ELZEVIR TERRANE, GRIMSTHORPE AND MAZINAW DOMAINS

LATE TECTONIC TO POSTTECTONIC INTRUSIVE ROCKS

22 — **Mafic Intrusive Rocks (<1080 Ma):** Fine-grained, weakly metamorphosed, diabase and basaltic dikes

INTRUSIVE CONTACT

Kensington–Skootamatta Intrusive Suite[c] (1050–1075Ma)

21 — **Felsic Intrusive Rocks**
21a Biotite syenite; medium- to coarse-grained, pink to red, biotite syenite, ± clinopyroxene ± hornblende
21b Medium- to coarse-grained, grey, biotite monzonite, ± clinopyroxene ± hornblende

INTRUSIVE CONTACT

Greenschist to Lower Amphibolite Facies Metamorphism in Grimsthorpe Domain at ~ 1090 Ma

Greenschist to Upper Amphibolite Facies Metamorphism in Mazinaw Domain at ~ 1080 Ma and ~ 1030 Ma

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

20 — **Fernleigh and Lessard Formations**
20a Biotite-diopside-carbonate-hornblende schist (Fernleigh Formation)
20b Biotite-carbonate schist (Lessard Formation)

19 — **Mayer Cave Formation**
19a Black or rusty-weathering, graphite-pyrite-biotite schist
19b Calcite marble, minor dolomite marble; with minor interlayered biotite schist (unit 19a)
19c Carbonate-clast breccia; consisting of clasts of units 19b, 12 and 11, in a graphite-biotite schist matrix
19d Scapolite-bearing metawacke and semipelitic schist

18 — **Bishop Corners Formation**
18a Metaconglomerate; dominated by clasts of metaquartzarenite
18b Metaquartzarenite
18c Metapelite

17 — **Norway Lake Formation**
17a Proximally derived, heterolithic metaconglomerate; locally contains clasts and boulders of unit 16c
17b Meta-arenite, calcareous meta-arenite

UNCONFORMITY

Methuen Suite[d] (1240–1250 Ma)

16 — **Felsic Intrusive Rocks**
16a Medium-grained, pink-weathering monzogranite; massive to foliated
16b Fine-grained, pink-weathering monzogranite; foliated; may include deformed equivalents of unit 8
16c Medium-grained, pink-weathering monzogranite; massive to foliated; commonly fluorite bearing
16d Unit 16a, but with rafts and screens of unit 14 and/or 9 and 10
16e Unit 16b, sheared to mylonitic

INTRUSIVE CONTACT

15 — **Mafic to Intermediate Intrusive Rocks**
15a Medium- to coarse-grained gabbro, minor diorite
15b Medium- to coarse-grained gabbro; foliated to gneissic
15c Medium- to coarse-grained gabbro of unknown age or affinity

Elzevir Suite[d] (1250–1270 Ma)

14 — **Intermediate Intrusive Rocks**
14a Medium-grained, melanocratic diorite to quartz diorite
14b Medium-grained diorite to quartz diorite
14c Schlieren-rich diorite to quartz diorite
14d Medium-grained tonalite, minor granodiorite
14e Medium-grained granodiorite
14f Medium-grained tonalite, minor granodiorite; locally with coarse quartz clots
14g Medium-grained tonalite and granodiorite; pink colouration of feldspars enhanced due to alteration related to adjacent faults
14h Intrusion breccia zone to injection migmatite; composed of blocks of units 10c, 13b and 13a in unit 14d
14i Unit 14d, foliated to gneissic
14m Intrusion breccia zone to injection migmatite; composed of blocks of units 5, 3 and 1

INTRUSIVE CONTACT

Killer Creek Suite[d] (>1270 Ma)

13 — **Mafic Intrusive Rocks**
13a Medium-grained gabbro
13b Medium-grained anorthosite, anorthositic gabbro, gabbroic anorthosite
13c Medium- to coarse-grained, melanocratic gabbro and hornblendite
13d Fine-grained chlorite-magnetite schist
13e Fine-grained gabbro to diabase
13f Mafic mylonite derived mainly from unit 13
13g Medium-grained anorthositic gabbro, gabbroic anorthosite, gabbro; foliated to gneissic
13h Units 13c and 13a cut by multiple veins of tonalite (unit 14); unit 13h locally transitional into unit 14h
13i Mafic mylonite to straight gneiss; derived mainly from units 13, 6 and 5

INTRUSIVE CONTACT

GRENVILLE SUPERGROUP

METASEDIMENTARY ROCKS

12 — **Dolomitic Carbonate Metasedimentary Rocks**
12a Dolomite marble; generally medium to coarse grained and massive; may include zones of calc-silicate assemblages (e.g., tremolite, diopside)
12b Unit 12a, interlayered with siliceous clastic metasedimentary rocks (units 10 and 8)

11 — **Calcitic Carbonate Metasedimentary Rocks:** Calcite marble; generally medium to coarse grained and massive; locally layered; may include zones with intact or boudinaged layers of siliceous clastic metasedimentary rocks (units 9 and 10)

10 — **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

9 — **Siliceous Clastic Metasedimentary Rocks (may include felsic and intermediate metatuffs and metasedimentary rocks of mainly volcanic provenance)**
9a Biotite-hornblende-quartz-plagioclase gneiss ("para-amphibolite") and hornblende-plagioclase gneiss; with layers of unit 3 present locally
9b Thinly layered, fine-grained, silicified quartzofeldspathic gneisses, possibly representing altered mylonitized sedimentary rocks
9c Flattened and sheared biotite-hornblende-quartz-plagioclase gneiss ("para-amphibolite"), hornblende-plagioclase gneiss, and quartzofeldspathic gneiss
9d Biotite-hornblende-quartz-plagioclase gneiss ("para-amphibolite"), hornblende-plagioclase gneiss, and quartzofeldspathic gneiss; commonly garnet bearing; may include layers of unit 3
9e Biotite-hornblende-quartz-plagioclase schist to gneiss; derived from volcanic wackes and volcanic arenite

METAVOLCANIC ROCKS

8 — **Tholeiitic Mafic to Felsic Metavolcanic Rocks (Mazinaw Lake Formation and Equivalents) (1240–1250 Ma)**
8a Felsites; probably derived from felsic tuffs and pyroclastic rocks; may include some fine-grained equivalents of unit 16
8b Fine-grained, grey- to dark grey-weathering, magnetite-biotite-hornblende-quartz-plagioclase gneiss; probably derived from icelandite (tholeiitic andesite) flows and tuffs
8c Fine-grained, pink- to buff-weathering felsic fragmental rocks; likely derived from ash-flow tuffs and pyroclastic flows
8d Unit 8a, finely intercalated with finely laminated, green to dark green, biotite-hornblende-plagioclase mafic gneiss; unit may in part be mylonitic in origin

7 — **Calc-Alkalic Mafic to Felsic Metavolcanic Rocks (Kashwakamak Formation and Equivalents) (1385–1260 Ma)**
7a Felsic tuffs
7b Felsic flows, massive rocks
7c Felsic breccias
7d Andesite tuffs
7e Andesite flows, massive rocks
7f Andesite breccias
7g Mainly flows, basaltic to andesitic composition, calc-alkalic affinities
7h Feldspar-porphyritic mafic dikes

6 — **Tholeiitic Mafic Metavolcanic Rocks (Tudor Formation and Equivalents) (>1285 Ma):** Fine-grained, green- to dark green-weathering amphibolite; mainly derived from basaltic flows and tuffs; also includes mafic metavolcanic rocks of unknown chemical or stratigraphic affinity

UNKOWN CONTACT

5 — **Mafic Intrusive Rocks:** Fine- to medium-grained, dark green- to black-weathering gabbro; locally foliated

INTRUSIVE CONTACT

GRENVILLE SUPERGROUP

GRIMSTHORPE GROUP (>1275 Ma)

METASEDIMENTARY AND METAVOLCANIC ROCKS

4 — **Siliceous Clastic Metasedimentary Rocks:** Buff- to grey-weathering wacke and siltstone, minor interbedded rusty schist

3 — **Mafic to Intermediate Volcaniclastic and Minor Metavolcanic Rocks**
3a Volcanic wackes, arkose
3b Volcanic mudstone, volcanic siltstone, minor conglomerate, rusty schist
3c Volcanic conglomerate
3d Unit 3c, but containing cobbles of gabbro (unit 2a)
3e Rusty schists, gossan zones
3f Bleached and altered equivalents of rocks of units 3 and 1

UNCONFORMITY

CANNIFF COMPLEX (>1275 Ma)

2 — **Gabbroic and Talcose Rocks**
2a Protomylonitic, medium- to coarse-grained, greenish gabbro
2b Talcose rocks

INTRUSIVE CONTACT

1 — **Tholeiitic Mafic and Felsic Metavolcanic Rocks**
1a Amphibolite and mafic schist to gneiss, likely derived from basaltic flows and tuffs
1b Unit 1a, with local gossan zones or rusty schist horizons
1c Unit 1a, in part contact metamorphosed by units 13 and 14
1d Felsic rocks; likely derived from rhyolite flows or tuffs
1e Unit 1a, pillowed

[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] *Igneous rock suites and their ages are adapted from Lumbers et al. (1990) and Easton (1992).*

SYMBOLS

- Geological contact, interpreted
- Fault, interpreted
- Fault, interpreted, normal dip component; dot indicates downthrown side (inclined)
- Unconformity, interpreted
- Alteration zone
- Bedding, facing unknown (inclined)
- Bedding, facing known (inclined, overturned)
- Graded bedding, facing known
- Crossbedding, facing known (inclined, overturned)
- Pillows, facing known (inclined, trend only)
- Igneous layering, facing unknown (inclined)
- Compositional layering and/or parallel tectonic foliation, unknown generation (inclined)
- Foliation, unknown generation (inclined, vertical)
- Foliation, second generation (inclined)
- Foliation, second generation (inclined)
- Lineation, with plunge
- Isograd, tied on high-grade side
- Anticline, second generation, interpreted
- Syncline, second generation, interpreted
- Mineral occurrence (number corresponds with "Properties and Occurrences" list)
- Location of isotopic age determination

ABBREVIATIONS

aspy	arsenopyrite	ky	kyanite
Ag	silver	mag	magnetite
As	arsenic	mo	marble
Au	gold	Mo	molybdenum
ba	barite	ni	nickel
cr	chromite	Pb	lead
cz	chalcopyrite	py	pyrrhotite
Cu	copper	py	pyrite
dol	dolomite	sp	sphalerite
gr	graphite	tur	tourmaline
ga	galena	tr	tremolite
hem	hematite	V	vanadium
IF	iron formation	Zn	zinc

fA	plagioclase Ar-Ar date, in Ma
kA	orthoclase Ar-Ar date, in Ma
mA	muscovite Ar-Ar date, in Ma
rU	rutile U-Pb date, in Ma
zU	zircon U-Pb date, in Ma

PROPERTIES AND OCCURRENCES

1. Barrie Syndicate (Zn, Pb, Cu)
2. Big Dipper Occurrence (Au, Ag, py, sp)
3. Buckhorn Mines Ltd. (fluor, py, gr)
4. Buffaloison Occurrence (Cu, py)
5. Conweet Exploration Ltd. (mag)
6. Dafoe Lake, Lot 2, Conc. VII, Cashel Twp. (talc, tr)
7. Dome Mine Occurrence (Au, Ag, As, py, cp)
8. Gough (Hardie) Occurrence (Au, Ag, aspy)
9. Helena Occurrence (Au, Ag, As, cpy)
10. Mazinaw base metals (Au, Cu, Zn)
11. Ore Chimney Mine (Fay-Ore) (Au, Pb, Zn)
12. Ore Mountain Occurrence (Au, Ag)
13. Pay Rock Gold Occurrence (Au, Ag)
14. Star Gold Mine (Au)
15. *United Reef Petroleums* (Au)
16. West Black River Occurrence (Au, aspy)

SOURCES OF INFORMATION

Thematic information on this map is tied to a digital base map derived from map 31 C/14 of the National Topographic System, scale 1:50 000. UTM grid zone 18, NAD27 datum.

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Magnetic declination approximately 12°46'W in 2001.

Geology not tied to surveyed lines.

Metric conversion factor: 1 foot = 0.3048 m.

CREDITS

Geological compilation by R.M. Easton, 1988, 1990, 1992 and 2001.

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

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Issued 2001.

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Easton, R.M. 2001. Precambrian geology, Mazinaw Lake area; Ontario Geological Survey, Preliminary Map P.3439, scale 1:50 000.

Ontario

Ontario Geological Survey

MAP P.3439

PRECAMBRIAN GEOLOGY

MAZINAW LAKE AREA

Scale 1:50 000

1000 m 0 1 2 km

NTS Reference: 31 C/14

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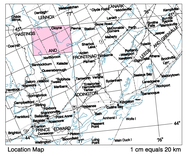
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