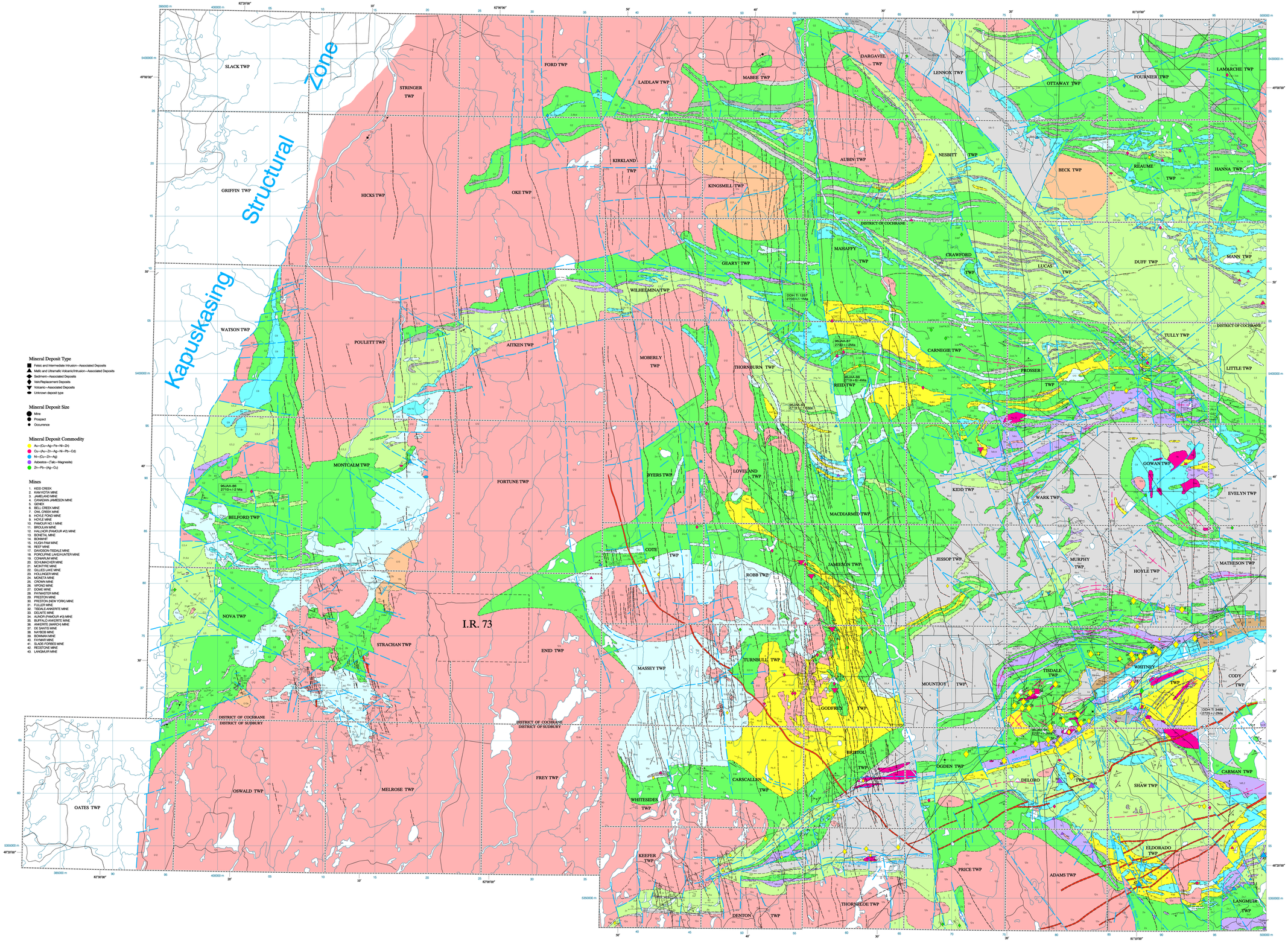

LEGEND[a,b,c]

PHANEROZOIC

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT
Sand, gravel, clay and wetland deposits

UNCONFORMITY

PRECAMBRIAN

PROTEROZOIC

15 **Diabase Dikes**
15 Unsubdivided
15a Metachronian (2453 Ma) (NM)
15b Biscotasing (2187 Ma) (ENE)
15c Sudbury (1238 Ma) (WNW)
15d Abitibi (1140 Ma) (ENE)
13 15e Matachewan (2473 Ma) (NW)

INTRUSIVE CONTACT

13 Alkalic Intrusive Suite
13 Unsubdivided
13a Syenite, monzonite
13b Diorite, syenodiorite, monzogabbro

12 Felsic to Intermediate Intrusive Suite
12 Unsubdivided
12a Tonalite, granodiorite, trondhjemite
12b Granite, quartz monzodiorite, quartz diorite

11 Porphyry Suite
11 Unsubdivided
11a Porphyry
11b Quartz and/or feldspar porphyry
11c Tonalite, granodiorite

10 Mafic Intrusive rocks
10 Unsubdivided
10a Diorite, gabbro, metagabbro
10b Porphyritic
10c Anorthositic gabbro, leucogabbro
10d Granophyre

9 Ultramafic Intrusive Rocks
9 Unsubdivided
9a Peridotite, pyroxenite
9c Schistose

INTRUSIVE CONTACT

8 Timiskaming-type Clastic Metasedimentary Rocks
8 Unsubdivided
8a Arenite
8b Wacke
8c Conglomerate
8d Mudstone, siltstone

7 Chemical Metasedimentary Rocks
7 Unsubdivided
7a Iron formation
7b Oxide facies
7c Sulfide facies
7d Silicate facies, chert
7e Graphite facies

6 Clastic Metasedimentary Rocks
6 Unsubdivided
6a Arenite
6b Wacke
6c Conglomerate
6d Mudstone, siltstone
6f Schistose-textured

5 Alkalic Metavolcanic Rocks/Intrusions

4 Felsic (to Intermediate) Metavolcanic Rocks/Intrusions
4 Unsubdivided
4a Massive flows
4b Tuff, lapilli-tuff
4c Tuff-breccia, pyroclastic-breccia
4d Porphyritic
4e Spherulitic
4f Schistose-textured
4G Calc-alkalic
4T Tholeiite

3 Intermediate (to Felsic) Metavolcanic Rocks/Intrusions
3 Unsubdivided
3a Massive flows
3b Pillowed flows
3c Varioliticflows
3d Hyaloclastite, flow breccia
3e Amygdaloidal flows
3f Tuff, lapilli-tuff
3g Tuff-breccia, pyroclastic-breccia
3h Schistose-textured
3G Calc-alkalic
3T Tholeiite

2 Mafic (to Intermediate) Metavolcanic Rocks/Intrusions
2 Unsubdivided
2a Massive flows
2b Pillowed flows
2c Varioliticflows
2d Hyaloclastite, flow breccia
2e Amygdaloidal flows
2f Tuff, lapilli-tuff
2g Tuff-breccia, pyroclastic-breccia
2h Schistose-textured
2G Calc-alkalic
2P High iron tholeiite
2M High magnesium tholeiite
2T Tholeiite

1 Ultramafic (to Mafic) Metavolcanic Rocks/Intrusions
1 Unsubdivided
1a Massive flows/intrusions
1b Polysutured flows
1c Spinifex-textured flows
1d Pillowed flows
1f Schistose-textured
1B Basaltic komatiite
1K Komatiite
1O Olivine-orpinitex

[a] This is a compilation legend.
[b] Units preceded by "0" are based on interpretation from aeromagnetic maps.
[c] Rocks are subdivided lithologically and the order does not imply age relationships within or among groups.

SOURCES OF INFORMATION

This map is the first in a series of 1:100 000 maps to augment the former Timmins–Kirkland Lake Map 2205 (scale 1 inch to 4 miles).

This geological map of the Timmins area was compiled from published maps and reports of the Ontario Geological Survey and the Geological Survey of Canada. In addition, information from unpublished reports and maps on file with the Ontario Geological Survey, university theses, papers in professional journals, geophysical maps and satellite images was incorporated.

Geological interpretation was further enhanced by utilizing the Earth Resources and Land Information System (ERLIS) databases such as the Assessment File Resource Inventory (AFRI), the Diamond Drill Hole (DDH) database, the Lithogeochemical database and the Mineral Deposit Inventory (MDI) database.

Base map assembled by the Ontario Geological Survey. A vector mosaic of Ontario Digital Topographic Data Base 1:20 000 Ontario Basic Mapping Program (OBM) was digitally compiled at a scale of 1:50 000 based on the Universal Transverse Mercator (UTM) projection and grid system, North American Datum 1927.

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Gupta, V.K. 1996. Ontario airborne magnetic and electromagnetic surveys Archean and Proterozoic "greenstone" belts; in Summary of Field Work and Other Activities 1996, Ontario Geological Survey, Miscellaneous Paper 166, p.189-195.

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Heather, K.B., Shore, G.T. and van Breemen, O. 1995. The convoluted "layer-cake": an old recipe with new ingredients for the Swayze greenstone belt, southern Superior Province, Ontario; in Current Research 1995-C, Geological Survey of Canada, p. 1-10.

Jackson, S.L. and Fyon, J.A. 1991. The western Abitibi Subprovince in Ontario; in Geology of Ontario, Ontario Geological Survey, Special Volume 4, Part 1, p. 405-482.

Magnetic declination approximately 10°48'W in 1998.

Metric conversion factor: 1 foot = 0.3048 m.

Ontario

Ontario Geological Survey

Map P.3379

PRECAMBRIAN GEOLOGY

GEOLOGICAL COMPILATION OF THE TIMMINS AREA, ABITIBI GREENSTONE BELT

Scale 1:100 000

2000 m 0 2 4 km

NTS References: 42 A/5,6,11,12,13,14; 42 B/8,9,16

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THE ABITIBI SUBPROVINCE

The Abitibi Subprovince is an 800 by 300 km Archean "granite-greenstone" domain situated along the southern margin of the Superior Province. It is dominated by supracrustal and granitoid rocks with a range of ages from 2.75 to 2.67 Ga (Jackson and Fyon 1991). Historically, the Abitibi greenstone belt was considered to be that portion of the Abitibi Subprovince extending to the western margin of the extensive granitoid complexes west of Timmins. New mapping and geochronological evidence (Heather et al., 1995) shows that the Swayze greenstone belt contains many of the structures and stratigraphic ages typical of the Abitibi belt in the Timmins-Kirkland Lake area. It is now interpreted to represent a deeper erosional level of a once-continuous Abitibi greenstone belt extending to the Kapuskasing Structural Zone.

The Abitibi greenstone belt is one of the largest, best preserved Archean greenstone belts in the world. Mapping in the vicinity of the Timmins map-sheet covers the area encompassing the city of Timmins and stretches from the Montcalm area in the west to Night hawk Lake in the east. Rocks are classified on the basis of their dominant lithology using textures, structures and both approximate and specific compositions to refine the classification. Geological information has been primarily compiled from previous mapping. New interpretations of the extent of lithological units, specifically in the areas lacking outcrop, have greatly benefited from the use of the reprocessed geophysical data for this area (Gupta 1996, 1996). As well, geochemical data have allowed for the further subdivision of the metavolcanic rocks.

Within the confines of this map area lies the classical Porcupine mining camp that is one of the pre-eminent lode gold mining districts in the world. Significant base metal production has also come from this camp mainly from the Kidd Creek deposit. Komatiite-associated nickel deposits have been intermittently mined. Non-metallic minerals such as scheelite, asbestos and talc have also been extracted.

SYMBOLS

Bedding, flow top (younging) with facing direction, magnitude of dip unknown

Bedding, grading with facing direction, vertical

Bedding, facing direction known from sedimentary structures other than grading and crossbedding, dip direction unknown

Bedding, sedimentary structures other than grading and crossbedding, inclined, no facing

Bedding, facing direction known from sedimentary structures other than grading and crossbedding, overturned, vertical

Bedding, sedimentary structures other than grading and crossbedding, vertical, facing

Bedding, pillows, facing direction known, dip direction unknown

Bedding, unsubdivided, magnitude of dip unknown, no facing

Bedding, facing from volcanic structures other than flow tops and pillows, overturned, dip value known

Bedding, facing from volcanic structures other than flow tops and pillows, overturned, magnitude of dip unknown

Compositional layering and parallel foliation, unknown generation, inclined

Compositional layering and parallel foliation, unknown generation, vertical

Compositional layering, unknown generation, magnitude of dip uncertain

Compositional layering and parallel foliation, unknown generation, vertical

Foliation, defined by minerals, first generation, inclined

Foliation, defined by minerals, first generation, magnitude of dip uncertain

Foliation, defined by minerals, first generation, vertical

Foliation, defined by minerals, second generation, inclined

Foliation, defined by minerals, second generation, vertical

Foliation, defined by minerals, unknown generation, trend only

Igneous layering, grading, facing only

Lineation, unidefined

Shear (ductile), dextral displacement, unknown generation, trend only

Shear (ductile), sinistral displacement, unknown generation, trend only

Geological contact

Dykes

Syncline

Anticline

Fault

96JAA-91
2707+/-2.5Ma
New geochronological sample location, sample number and results

CREDITS

Geological compilation and interpretation by J.A. Ayer and N.F. Trowell. Compilation of mineral deposit data by A. Wilson.
Preparation of base map by B. Leonard, L. Measter and Z. Madon.
Preparation of geophysical and satellite imagery by Z. Madon.
GIS compilation of data by L. Measter, Z. Madon and S.J. McIlraith.

To enable the rapid dissemination of information, this map has not received a technical edit. Discrepancies may occur for which the Ontario Ministry of Northern Development and Mines does not assume liability. Users should verify critical information.

Issued 1998.

Information from this publication may be quoted if credit is given. It is recommended that reference to this map be made in the following form:

Ayer, J.A. and Trowell, N.F. 1998. Geological compilation of the Timmins area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3379, scale 1:100 000.