LEGEND[a,b,c,d]

PHANEROZOIC

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT
Sand, gravel, clay and wetland deposits

UNCONFORMITY

MESOZOIC

JURASSIC

17 Kimberlite
17 Unsubdivided

INTRUSIVE CONTACT

PRECAMBRIAN

PROTEROZOIC

HURONIAN

16 Unsubdivided

15 Diabase Dikes
15 Unsubdivided
15a Matachewan (2452 Ma) (NW)
15b Biscotasing (2167 Ma) (ENE)
15c Sudbury (1238 Ma) (WNW)
15d Abitibi (1140 Ma) (ENE)

INTRUSIVE CONTACT

ARCHEAN

NEOARCHEAN

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

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
11d Tonalite, granodiorite

10 Mafic Intrusive Rocks
10 Unsubdivided
10a Diorite, gabbro, melagabbro
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
5 Unsubdivided
5a Mafic to intermediate flows, flow breccia
5b Intermediate to felsic flows

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
4C Calc-alkalic
4T Tholeiite

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

2 Mafic (to Intermediate) Metavolcanic Rocks/Intrusions
2 Unsubdivided
2a Massive flows
2b Pillowed flows
2c Variolitic flows
2d Hyaloclastite, flow breccia
2e Amygdaloidal flows
2f Tuff, lapilli tuff
2g Tuff breccia, pyroclastic breccia
2h Schistose-textured
2C Calc-alkalic
2F 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-spinifex

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

PRODUCING AND PAST PRODUCING MINES

1. PREMIER
2. PORCUPINE PENINSULAR
3. GOLDHAWK
4. AQUARIUS
5. ALEXO
6. STOCK
7. QUEBEC STURGEON
8. MAUDE LAKE
9. ALJO
10. BLUE QUARTZ
11. BARTON CREEK
12. GLIMMER
13. GIBSON
14. MATACHEWAN
15. ROSS
16. CANADIAN ARROW
17. HEDMAN
18. POTTERDOAL
19. POTTER
20. MUNRO
21. CROESUS
22. WHITE-GUYATT
23. AMERICAN EAGLE
24. GOLD PYRAMID
25. DAVIDOR
26. BUFFONTA
27. JONPOL
28. MCDERMOTT
29. HOLLOWAY
30. CANAMAX EAST

Mineral Deposit Type

- Felsic to Intermediate Intrusion–Associated Deposits
- Alkalic Intrusion–Associated Deposits
- Mafic to Ultramafic Volcanic and Intrusion–Associated Deposits
- Sediment–Associated Deposits
- Vein/Replacement Deposits
- Volcanic–Associated Deposits
- Unknown deposit type

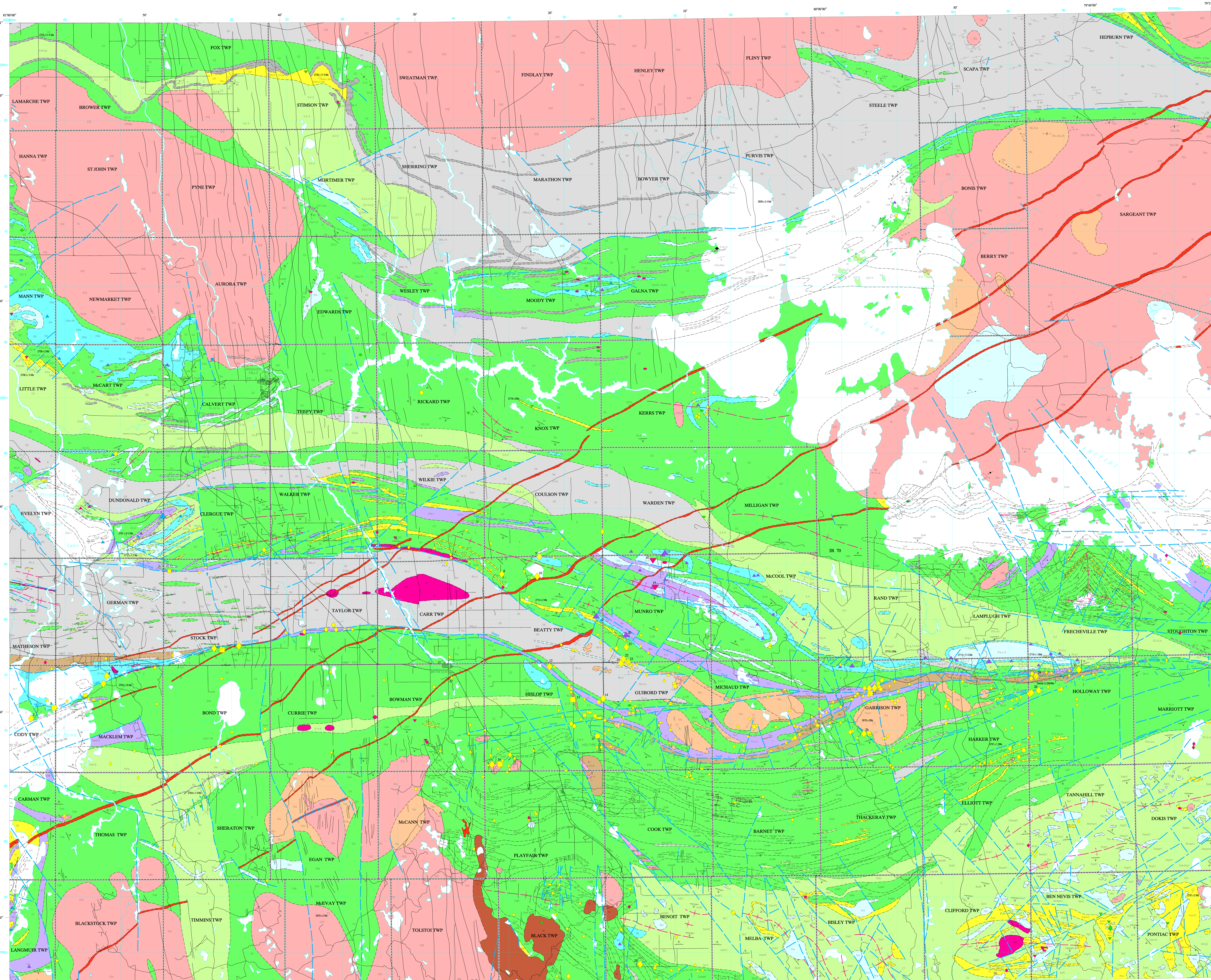
Mineral Deposit Size

- Mine
- Prospect
- Occurrence

Mineral Deposit Commodity*

- Au±(Ag±Cu±Mo±asb±Zn±Bi±Ni±Fe±W)
- Cu±(Au±Zn±Ag±Ni±Co±Pb)
- Ni±(Cu±Asb±Au)
- asb±(Cr±Cu±Ni±srp)
- Zn±(±Pb±Cu±Ni±Ag±Au)
- Barite
- Diamond
- Ruby
- Fe
- Mo±(Li)

*Abbreviations used for commodities:
Ag = silver; asb = asbestos; Au = gold; Bi = bismuth; Co = cobalt; Cr = chromium; Cu = copper; Fe = iron; Li = lithium; Mo = molybdenum; Ni = nickel; Pb = lead; srp = serpentine; W = tungsten; Zn = zinc.



Ontario

Ontario Geological Survey

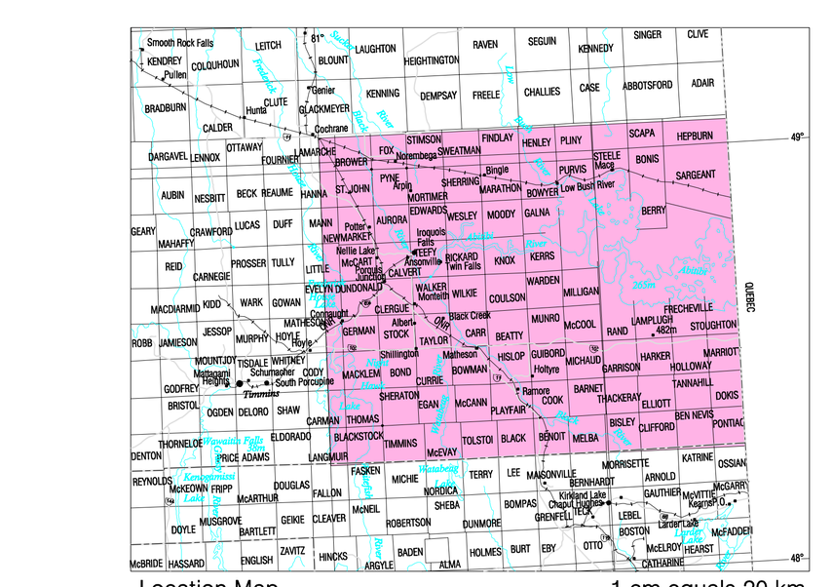
Map P.3398

PRECAMBRIAN GEOLOGY

GEOLOGICAL COMPILATION OF THE LAKE ABITIBI AREA, ABITIBI GREENSTONE BELT

Scale 1:100 000
2000 m 0 2 4 km

NTS References: 32 D/5,12,13; 42 A/7,8,9,10,15,16



Location Map 1 cm equals 20 km

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 and 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 world's largest, best preserved and most economically productive greenstone belts in the world.

The Lake Abitibi map sheet covers the area from Night Hawk Lake to the Quebec border. 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 lithologic units, specifically in the areas lacking outcrop, have greatly benefited from the use of the reprocessed geophysical data for this area (Gupta 1995, 1996). As well, geochemical data have allowed for the further subdivision of the metavolcanic rocks.

Several producing and past producing gold mines are found in this area, including the Holt-McDermott and Holloway mines. Gold-bearing shear zones are generally sub-parallel to stratigraphy and are displaced by numerous cross-cutting faults. The Porcupine–Destor fault zone is the most significant gold-bearing structure in this area. Non-metallic minerals such as asbestos have been extracted commercially from several deposits. The Hedman asbestos deposit is presently being mined.

SYMBOLS

- Geological contact
- Fault
- Fault; dextral horizontal displacement
- Fault; sinistral horizontal displacement
- Anticline
- Syncline
- Bedding; facing direction known from sedimentary structures other than grading and crossbedding (trend only, inclined)
- Bedding; facing direction known from sedimentary structures other than grading and crossbedding (overturned, vertical)
- Bedding; pillows, facing direction known (trend only, inclined)
- Bedding; unsubdivided, facing direction unknown (inclined, vertical)
- Compositional layering and parallel foliation; unknown generation (vertical)
- Foliation, defined by minerals; unknown generation (inclined, vertical)
- Igneous layering; unsubdivided, facing direction unknown (inclined, vertical)
- Lineation; undefined, unknown generation, plunge may be indicated
- Schistosity (inclined, vertical)
- 2719±2Ma New geochronological sample location and results
- Dikes

SOURCES OF INFORMATION

This map is the second 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 Lake Abitibi 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. Satellite imagery including Landsat Thematic Mapper images and RADARSAT radar images were used as well.

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) maps was digitally compiled at a scale of 1:50 000 based on the Universal Transverse Mercator (UTM) projection and grid system, Zone 17, North American Datum 1927.

References

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.

Ayer, J.A., Trowell, N.F., Madon, Z., Wilson, A., Messier, L. and McIlraith, S.J. 1998. Geological compilation of the Timmins area, Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release - Data 36; GIS data in Arcview and AutoCAD formats.

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.168-176.

—— 1995. Processing of airborne magnetic and electromagnetic surveys—progress report; in Summary of Field Work and Other Activities 1995, Ontario Geological Survey, Miscellaneous Paper 164, p.299-300.

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.404-482.

Magnetic declination in 1999 through the center of the map area is 10°23′W. Mean annual change is 0.8′ easterly.

Geology not tied to surveyed lines.

CREDITS

Geological compilation and interpretation by J.A. Ayer, B. Berger and N.F. Trowell.

Compilation of mineral deposit data by R. Zalnieriunas and Z. Madon. Preparation of base map by L. Valade, L. Messier and Z. Madon. Preparation of geophysical and satellite imagery by Z. Madon. GIS compilation of data by Z. Madon and L. Valade.

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 1999.

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., Berger, B.R. and Trowell, N.F. 1999. Geological compilation of the Lake Abitibi area, Abitibi greenstone belt; Ontario Geological Survey, Map P.3398, scale 1:100 000.