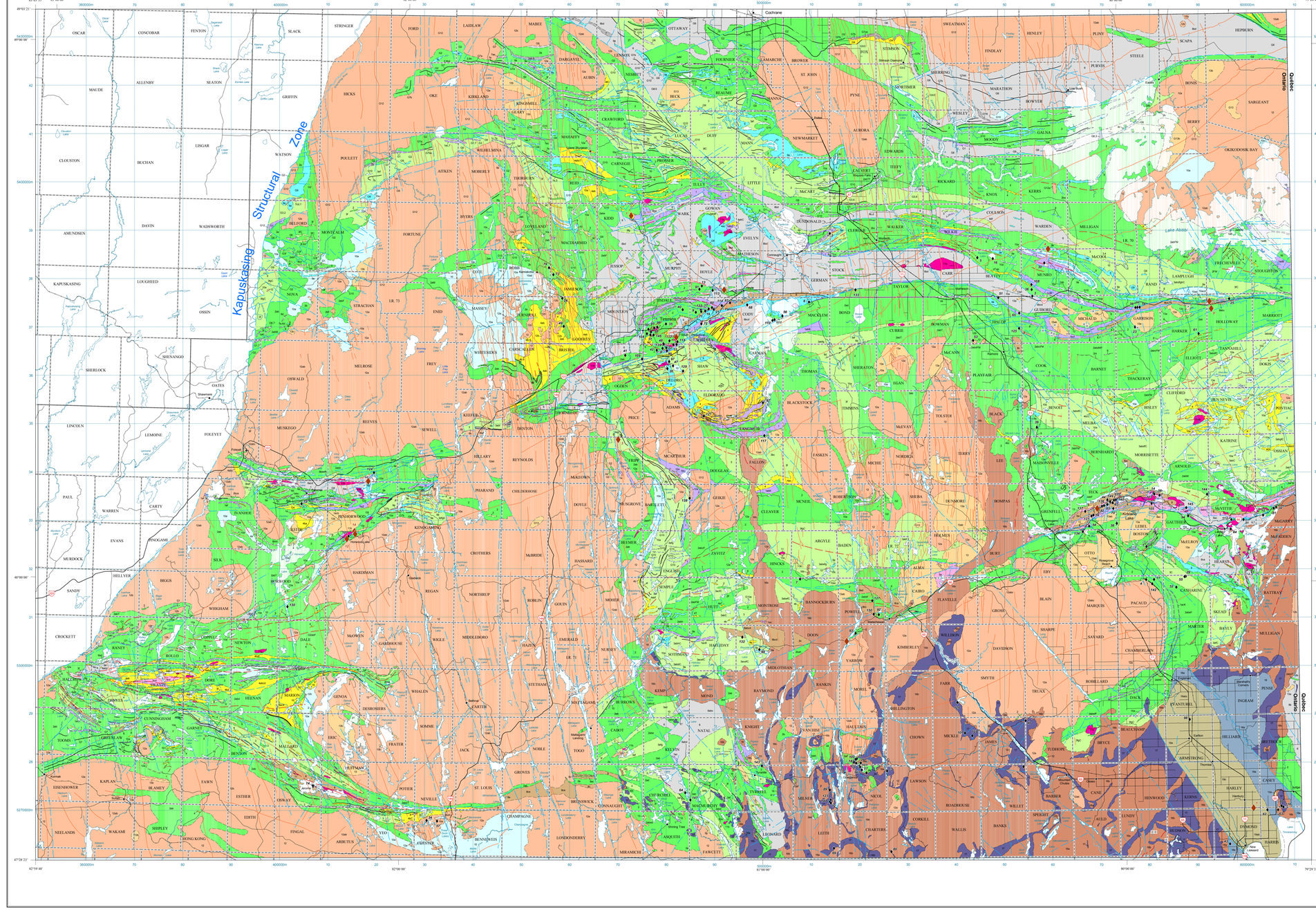


LEGEND[1][2][3][4][5][6]

PHANEROZOIC

CENOZOIC

QUATERNARY

RECENT

Lake, stream and wetland deposits

PLEISTOCENE

Glacial, glaciofluvial and glaciolacustrine deposits: sand, gravel, clay, till

UNCONFORMITY

MESOZOIC

JURASSIC

20 — **Kimberlite**

PALEOZOIC

SILURIAN

19 — **Sedimentary Rocks**
19a Thorncliffe Formation: dolostone, limestone, minor sandstone
19b Earlton Formation: limestone, dolostone, shale
19c Walsh Group (unsubdivided): dolostone, shale

ORDOVICIAN

18 — **Sedimentary Rocks**
18a Liskeard Group (unsubdivided): limestone, shale

INTRUSIVE CONTACT

PRECAMBRIAN

PROTEROZOIC

NIPISSING

17 — **Mafic Intrusive Rocks:** diabase, granophyre

HURONIAN SUPERGROUP

16 — **Sedimentary Rocks**
16a Lorrain Formation
16b Gowganda Formation

15 — **Diabase Dikes**
15a Matachewan (2452 Ma) (NW)
15b Biscotasing (2167 Ma) (ENE)
15c Nipissing (1238 Ma) (NNE)
15d Abitibi (1140 Ma) (ENE)

INTRUSIVE CONTACT

ARCHEAN

NEOARCHEAN

13 — **Alkalic Intrusive Suite**
13a Syenite, monzonite, granite
13b Diorite, syenodiorite, monzogabbro, hornblendite
13c Syenite-textured

12 — **Felsic to Intermediate Intrusive Suite**
12a Tonalite, granodiorite, trondhjemite
12b Granite, quartz monzodiorite, quartz diorite
12c Schistose-textured

11 — **Porphyry Suite**
11a Porphyry
11b Quartz and/or feldspar porphyry
11d Tonalite, granodiorite

10 — **Mafic Intrusive Rocks**
10a Diorite, gabbro, metagabbro
10b Porphyritic
10c Diorite, metagabbro, leucogabbro
10d Granophyre

9 — **Ultramafic Intrusive Rocks**
9a Peridotite, pyroxenite
9b Schistose-textured

INTRUSIVE CONTACT

8 — **Timiskaming-Type Clastic Metasedimentary Rocks**
8a Arenite
8b Wacke
8c Conglomerate
8d Mudstone, siltstone
8e Schistose-textured

UNCONFORMITY

7 — **Chemical Metasedimentary Rocks**
7a Iron formation
7b Oxide facies
7c Sulphide facies
7d Silicate facies, chert
7e Graphite facies

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

5 — **Alkalic and Subalkalic Metavolcanic Rocks/Intrusions (Timiskaming-Type)**
5a Massive flows
5b Porphyritic flows
5c Tuff
5e Schistose-textured

4 — **Felsic (to Intermediate) Metavolcanic Rocks/Intrusions**
4a Massive flows
4b Tuff, lapilli tuff
4c Tuff breccia, pyroclastic breccia
4d Spherulitic-textured
4e Schistose-textured
4f Tholeiite

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

2 — **Mafic (to Intermediate) Metavolcanic Rocks/Intrusions**
2a Massive flows
2b Pillowed flows
2c Varioliti flows
2d Hyaloclastite, flow breccia
2e Amygdaloidal flows
2f Tuff, lapilli tuff
2g Tuff breccia, pyroclastic breccia
2h Schistose-textured
2i Calc-alkalic
2j Calc-alkaline
2k High-magnesium tholeiite
2l Tholeiite

1 — **Ultramafic (to Mafic) Metavolcanic Rocks/Intrusions**
1a Massive flows/intrusions
1b Polyspinifex flows
1c Spinifex-textured flows
1d Pillowed flows
1e Breccia
1f Schistose-textured
1g Basaltic komatiite
1h Komatiite
1i Olivine-spinifex

[1] This is a compilation legend.
[2] Rock codes preceded by "G" are based on interpretation from aeromagnetic maps; those preceded by "T" are based on interpretation of topographic data.
[3] Rock codes designated with a "+" (e.g., 2j3i) indicate the lithology may contain either rock type and the first number code is considered to be more likely.
[4] Rocks are subdivided lithologically and the order does not imply age relationships in areas of strong deformation.
[5] Not all subcodes are present on map-sheet; please refer to 1:100 000 sheets for detail.

SYMBOLS

- Geological contact
- Fault or deformation zone
- Major fold (anticline)
- Major fold (syncline)
- Major fold, undifferentiated
- Main highway
- Secondary highway/road

ABBREVIATIONS

Ag	silver
abe	asbestos
Au	gold
Cd	cadmium
Co	cobalt
Cu	copper
dolo	dolostone
Fe	iron
lime	limestone
Mo	molybdenum
Ni	nickel
Pb	lead
serp	serpentine
sil	silica
soap	soapstone
U	uranium
Zn	zinc

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 Subprovince has been subdivided into the Abitibi belt and the Pontiac 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 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 1:250 000 central Abitibi greenstone belt map sheet covers the area from the Kapuskasing Structural Zone in the west to the Quebec border in the east and from Cochrane in the north to New Liskeard in the south. Bedrock geology is based on a wide variety of publications, open files, theses, 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 benefitted from the use of aeromagnetic maps (Ministère des Ressources naturelles 1:20 000). As well, geochronical data have allowed for the further subdivision of the metavolcanic rocks.

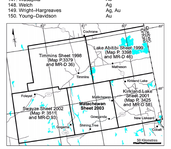
Within the confines of this map lie the classical Porcupine and Kirkland Lake–Larder Lake mining camps that are two of the pre-eminent lode-gold-producing districts in the world. A significant number of past-producing silver mines are present in the Cobalt area, part of the famed Cobalt Embayment. The Cobalt Embayment is a fault-bounded outlier that came from the present-producing Kidd Creek deposit situated in the Porcupine mining camp. Other past-producing mines produced various amounts of bismuth, cobalt, copper, lead, molybdenum, nickel, asbestos and zinc, while the Ontario Barium Mine is presently producing barite and the Penhorwood Mine is producing talc.

♦Present-Producing Mines and Primary Commodity

1.	Breault Quarry	dolo, lime
2.	Dome Mine	Au
3.	Great White Minerals Inc.	sil
4.	Heidman	asbe, serp
5.	Holloway Mine	Au
6.	Hoyle Pond Mine	Au
7.	Kidd Creek	Ag, Cd, Cu, Zn
8.	Kirkland Lake Gold Inc. / Macassa Mine	Au
9.	Pamour Mine	Au
10.	Ontario Barium	barite
11.	Penhorwood Mine	soap, talc
12.	Roseval Silica	sil
13.	Roseval Silica No. 2	sil
14.	Roseval Silica No. 3	sil

♦Past-Producing Mines and Primary Commodity

1.	Adams	Fe
2.	Akeso Mine	Cu, Ni
3.	Armenian Eagle Mine	Au
4.	Amulty	Cu
5.	Anoki	Au
6.	Aquarius	Au
7.	Ashley	Au
8.	Aunor	Au
9.	Banner Mine	Au
10.	Barber-Larder	Au
11.	Barry–Hollinger	Au
12.	Bartlett	Ag
13.	Bell Creek Mine	Au
14.	Bidgood	Au, U
15.	Blake	Au
16.	Blue Quartz Mine	Au
17.	Bonetal Mine	Au
18.	Bonetal	Au
19.	Bonwhit Mine	Au
20.	Bowman Mine	asbe
21.	Broulan Mine	Au
22.	Buffalo Ankerite	Au
23.	Bunker	Au
24.	Canadian Jameson Mine	Cu, Zn
25.	Caramex East	Au
26.	Cagnan	Ag
27.	Castle	Ag
28.	Catherine Chetlewey	Au
29.	Cathroy	Au
30.	Centre Hill Mines Ltd.	Ag, Cu, Zn
31.	Chemmis	Au
32.	Chesterville	Au
33.	Clarkwin	Au
34.	Claim 519970	Au, Cu
35.	Coniaurum Mine	Au, Cu
36.	Croesus Mine	Au, Au
37.	Crown Mine	Au
38.	Davis	Au
39.	Dendor	Au
40.	Davidson Mine	Au
41.	De Sando Mine	Au, Au
42.	Deloro Mine	Au
43.	Deloro Township Dump Quarry	dolo, lime
44.	Earlmacque	Au
45.	Eastward	Au
46.	Elbel	Au
47.	Feymar	Ag, Au
48.	Fork Mine	Au, Au
49.	Genex	Cu
50.	Gillies Lake Mine	Au
51.	Gold Belt	Au
52.	Gold Hill	Au
53.	Golden Arrow - West	Au
54.	Golden Gate	Au
55.	Golden Shield	Au
56.	Gold Reef	Au
57.	Gomak	Au
58.	Gordon Lebel	Au, U
59.	Gracie East	Au
60.	Hallnor Mine	Au
61.	Harker	Au
62.	Harley Quarries	dolo
63.	Harmak	Ag, Co
64.	Herrick	Au
65.	Heisip - West	Au
66.	Hollinger Mine	Au
67.	Hoyle Mine	Au
68.	Huddleston, J.	Au
69.	Hudson Bay	Au
70.	Hudson-Rand South	Au
71.	Hunter Mine	Au
72.	Hunter Mine	Au
73.	Jamieland Mine	Cu, Zn
74.	Jerome	Au
75.	Jobburn	Au
76.	Jonpol Pit Zone	Au
77.	Jonpol JP Zone	Au
78.	Jonpol RP Zone	Au
79.	Kam Kotia Mine	Cu, Zn
80.	Kerr	Au
81.	Kerr Mine	Au
82.	Kirkland Lake	Au
83.	Kirkland Townsite	Au
84.	Lapaska	Au
85.	Lake Shore	Au
86.	Larder	Au
87.	Lamphar Mine	Ni
88.	Lucky	Ag, Co
89.	Lucky	Au
90.	March Gold, Ltd	Au
91.	Marbhit	Au
92.	Matachewan	Au
93.	Matarow	Pb, Zn
94.	McBrien	Au
95.	McIntyre Mine	Au
96.	McIntyre Porphyry	Cu
97.	McLaren-Porcupine Claim HR 1086	Au
98.	McNamara's Quarry	dolo, lime
99.	Mecassa	Au
100.	Miller Lake 1	Ag
101.	Miller Lake 2	Ag
102.	Millerett	Au
103.	Moffat–Hall	Au
104.	Monarch-Kerr	Au
105.	Morris-Kirkland	Au
106.	Morrison	Au
107.	Morrison, B.L.	Au
108.	Munro	asbe
109.	Munro Mine	Au, Au
110.	Night Hawk Peninsular Mine	Au
111.	Nighthawk Mine	Au
112.	Omega	Au
113.	Owl Creek	Au
114.	Pamour Mine	Au
115.	Paymaster Mine	Au
116.	Peirina	Ag
117.	Pinnacle Mine	Ni, Ni
118.	Preston (New York) Mine	Au
119.	Pretorium	Au
120.	Ravena	Au
121.	Redstone Mine	Au
122.	Reed Mine	Au
123.	Reef	Au
124.	Reeves Mine	asbe
125.	Rose	Ag, Au
126.	Roy	Ag, Au
127.	Sand Lake	Au, Mo
128.	Shawn-Darragh	Au
129.	Slade–Forbes Mine	asbe
130.	Smith–Thorne	Au
131.	St. Joseph	Au
132.	Stedman	Au
133.	Stock Township Mine	Au
134.	Swastika	Au
135.	Sylvanite	Au
136.	Teck–Hughes	Au
137.	Tetrault	Au
138.	Tannont	Ni
139.	Tiedale–Ankerite Mine	Au
140.	Tolburn	Au
141.	Tonopah	Ag
142.	Turgeon–Ossian	Au
143.	Turgeon	Au
144.	Upper Beaver	Au, Cu
145.	Upper Canada	Au
146.	Vipond Mine	Au
147.	Wanapitei	Au
148.	Welch	Au
149.	Wright–Hargreaves	Ag, Au
150.	Young–Davidson	Au



Location of 1:100 000 scale map sheets and corresponding digital data releases (Miscellaneous Release–Data) cited in "REFERENCES".

Ontario

Ontario Geological Survey

MAP P.3565

PRECAMBRIAN GEOLOGY

GEOLOGICAL COMPILATION OF THE CENTRAL ABITIBI GREENSTONE BELT: KAPUSKASING STRUCTURAL ZONE TO THE QUÉBEC BORDER

Scale 1:250 000

5000 m 0 5 10 km

NTS Reference: 42A and parts of 31M, 41O, 41P, 42B

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Location Map 1 cm equals 35 km

SOURCES OF INFORMATION

This geological map of the Abitibi Subprovince was compiled from published and unpublished maps, reports, theses, papers and digital data of the Geological Survey of Canada. In addition, unpublished reports and maps on file with the Ontario Geological Survey, university theses, papers in professional journals, geophysical maps and satellite imagery were incorporated.

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

Magnetic declination in 2004 through the center of the map area was 11°5'W. Mean annual change is 0.8' easterly.

REFERENCES

Ayer, J.A., Trowell, N.F. and Josey, S. 2004. Geological compilation of the Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release–Data 143.

Ayer, J.A., Trowell, N.F., Josey, S., Nevills, M. and Valiade, L. 2003. Geological compilation of the Matachewan area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3527, scale 1:100 000.

Ayer, J.A., Trowell, N.F., Josey, S., Nevills, M. and Valiade, L. 2003. Geological compilation of the Matachewan area, Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release–Data 84.

Ayer, J.A., Barr, E., Bleeker, W., Chiasser, R.A., Hall, G., Ketchum, J.W.F., Houle, M.G., Johns, G.W., Josey, S., Madon, D., Rainsford, D., Trowell, N.F. and Vaillancourt, C. 2002. New geochronological results from the Timmins area: implications for the timing of late-tectonic stratigraphy, magmatism and gold mineralization; *in* Summary of Field Work and Other Activities 2002, Ontario Geological Survey, Open File Report 6120, p.33-1 to 33-11.

Ayer, J.A., Ketchum, J.W.F. and Trowell, N.F. 2002. New geochronological and neodymium isotopic results from the Abitibi greenstone belt, with implications for the age of the Timiskaming Group, Kirkland Lake area; sedimentation and volcanism; *in* Summary of Field Work and Other Activities 2002, Ontario Geological Survey, Open File Report 6100, p.5-1 to 5-15.

Ayer, J., Amelin, Y., Corfu, F., Kamo, S., Ketchum, J., Kwok, K. and Trowell, N. 2002. Evolution of the southern Abitibi greenstone belt based on U-Pb geochronology: autochthonous volcanic construction followed by plutonism, regional deformation and sedimentation; Precambrian Research, v.115, p.63-95.

Ayer, J.A. and Trowell, N.F. 2002. Geological compilation of the Swayze area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3511, scale 1:100 000.

Ayer, J.A., Trowell, N.F., Valade, L., Nevills, M. and Madon, Z. 2002. Geological compilation of the Swayze area, Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release–Data 83.

Ayer, J.A., Amelin, Y., Corfu, F., Kamo, S., Ketchum, J.W.F. and Trowell, N. 2001. Autochthonous evolution of the southern Abitibi greenstone belt, Canada; *in* Fourth International Archaean Symposium, Extended Abstracts, eds. Cassidy, Hagemann and Groves Geary Organisation, Canberra, Australia, p.279-281.

Ayer, J.A. and Trowell, N.F. 2001. The Abitibi greenstone belt; a program update; *in* Summary of Field Work and Other Activities 2001, Ontario Geological Survey, Open File Report 6070, p.4-1 to 4-9.

Ayer, J.A. and Trowell, N.F. 2000. Geological compilation of the Kirkland Lake area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3426, scale 1:100 000.

Ayer, J.A., Trowell, N.F., Valade, L., Amyotte, E. and Madon, Z. 2000. Geological compilation of the Kirkland Lake area, Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release–Data 58.

Ayer, J.A., Trowell, N.F., Madon, Z., Kamo, S., Kwok, Y.Y. and Amelin, Y. 1999. Geochronological constraints on the stratigraphy and mineralization, Timmins area, Abitibi greenstone belt: preliminary chronostratigraphic results; *in* Summary of Field Work and Other Activities 1999, Ontario Geological Survey, Open File Report 6000, p.4-1 to 4-14.

Ayer, J.A., Berger, B.R. and Trowell, N.F. 1999. Geological compilation of the Lake Abitibi area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3388, scale 1:100 000.

Ayer, J.A., Trowell, N.F., Berger, B., Madon, Z., Zaharatos, R. and Valade, L. 1999. Geological compilation of the Lake Abitibi area, Abitibi greenstone belt; Ontario Geological Survey, Miscellaneous Release–Data 46.

Ayer, J.A., Trowell, N.F., Amelin, Y. and Corfu, F. 1999. Geological compilation of the Abitibi greenstone belt in Ontario towards a revised stratigraphy based on compilation and new geochronology results; *in* Summary of Field Work and Other Activities 1999, Ontario Geological Survey, Miscellaneous Paper 169, p.14-24.

Ayer, J., Berger, B., Johns, G., Trowell, N., Born, P. and Mueller, W. 1999. Late Archean rock types and controls on gold mineralization in the southern Abitibi greenstone belt; Geological Association of Canada–Mineralogical Association of Canada Joint Annual Meeting, Sudbury 1999, Field Trip B3 Guidebook, 73p.

Ayer, J.A. and Trowell, N.F. 1998. Geological compilation of the Timmins area, Abitibi greenstone belt; Ontario Geological Survey, Preliminary Map P.3376, 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 35.

Ayer, J.A., Trowell, N.F., Madon, Z. and Corfu, F. 1997. Geological compilation of the Abitibi greenstone belt in Ontario: recent geochronological results and metallogenic potential with stratigraphy; *in* Summary of Field Work and Other Activities 1997, Ontario Geological Survey, Miscellaneous Paper 168, p.3-6.

Ayer, J.A. and Trowell, N.F. 1996. Geological compilation of the Abitibi greenstone belt, Ontario; *in* Summary of Field Work and Other Activities, 1996, Ontario Geological Survey, Miscellaneous Paper 166, p.19-22.

Ayer, J.A. and Trowell, N.F. 1995. Geological compilation of the Abitibi greenstone belt, Ontario; *in* Summary of Field Work and Other Activities 1995, Ontario Geological Survey, Miscellaneous Paper 164, p.5-8.

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.168-175.

———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, pt.1, p.405-482.

CREDITS

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Compilation of mineral deposit data by J.A. Ayer, S. Josey and N.F. Trowell.

Preparation of base map by S. Josey.

Preparation of geophysical imagery by S. Josey.

GIS compilation of data by S. Josey.

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.

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