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Ontario Geological Survey
Open File Report 6228

# Mineral Occurrences of the Central and Eastern Uchi Domain

2009

Ontario

ONTARIO GEOLOGICAL SURVEY

Open File Report 6228

# Mineral Occurrences of the Central and Eastern Uchi Domain

by

M.A. Puumala

2009

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Miscellaneous Release—Data 239

**GIS Compilation of Mineral Occurrences of the Central and Eastern Uchi Domain**

by M.A. Puumala

This digital release is a compilation of mineral occurrences of the central and eastern Uchi domain of northwestern Ontario. This compilation was conducted during 2006–2007 as part of the Far North Geological Mapping Initiative. These data are being released in conjunction with Open File Report (OFR) 6228, *Mineral Occurrences of the Central and Eastern Uchi Domain*. OFR 6228 provides detailed occurrence descriptions; however, additional data for the mineral occurrences are provided as 2 Microsoft® Excel® (*.xls*) spreadsheets. Two colour figures (Map 1 and Map 2) and Figure 10 (all 1:250 000 scale) accompany OFR 6228, digital versions of which are provided in portable document format (4 *.pdf* files). This release provides *.mxd* and geodatabase files in ESRI® ArcGIS® 9.2 format, as well as shapefiles, for Map 1, Map 2 and Figure 10. Location data are provided in the Universal Transverse Mercator (UTM) projection and grid system, zones 15 and 16, North American Datum 1983 (NAD83). Available on 1 CD.

These digital data are available separately from this report.

# Abstract

This report, made possible through the Ontario Geological Survey's Far North Geological Mapping Initiative, provides a compilation of geological and metallogenic information for 372 mineral occurrences. These occurrences have been documented since the 1920s through mineral exploration programs and government geological surveys in the central and eastern portions of the Archean Uchi domain of the Superior Province.

The study area is located between latitudes 51° and 52°N and longitudes 86° and 92°W, which are covered by the National Topographic System (NTS) 1:250 000 scale map sheets 52 O, 52 P and 42 M, and the northern portion of 52 J. Much of the study area is remote and difficult to access, with all-weather roads currently limited to the Highway 599/808 corridor that passes through the communities of Mishkeegogamang Ojibway Nation (New Osnaburgh) and Pickle Lake in the west-central portion of the study area, forest access roads that terminate at the community of Slate Falls near the southwestern corner of the study area, and forest access roads that have been advanced into the south-central portion of the study area in the Sim–Morden–Witchwood lakes areas.

The compiled occurrences include 6 past-producing mines (4 with published reserves), 25 developed prospects with reserves, 54 prospects, 267 occurrences and 20 discretionary occurrences. These mineral occurrences represent a wide variety of mineralization types, including lode gold (vein and replacement), polymetallic vein, mafic to ultramafic intrusion-hosted copper-nickel-platinum group elements (PGE), rare-element-bearing pegmatite, volcanogenic massive sulphide (VMS), intrusive porphyry-related copper-molybdenum-gold, and Algoma-type banded iron formation.

The vast majority of the documented mineral occurrences in the central and eastern Uchi domain are located within or immediately adjacent to the volcanic-sedimentary rock sequences that are most commonly referred to as greenstone belts. The study area includes the entire Miminiska–Fort Hope, Pickle Lake, Lake St. Joseph, Meen–Dempster and Lang Lake greenstone belts, as well as the far eastern end of the Birch–Uchi greenstone belt.

The varied geology and tectonic histories of the supracrustal rock assemblages that make up the greenstone belts influence the distribution of economic mineral occurrences. A key goal of this study was to establish the relationship between the various styles of mineralization and individual tectonic events. By gaining an understanding of these relationships, exploration for specific commodities can be focussed in areas where the tectonic history indicates the highest potential for economic mineralization.

An evaluation of the tectonic history of the central and eastern Uchi domain has resulted in the following proposed chronology of metallogenic events.

1. Mafic to ultramafic intrusion-hosted copper-nickel-PGE mineralization in rocks of the Pickle Crow assemblage in the Pickle Lake and Miminiska–Fort Hope greenstone belts (>2860 Ma).
2. Volcanogenic massive sulphide (VMS)-type mineralization in felsic volcanic rocks of the Kaminiskag (formerly Woman) assemblage in the Pickle Lake greenstone belt (2842 to 2836 Ma).
3. Later VMS-type mineralization in association with volcanic rocks of the Confederation assemblage (2744 to 2730 Ma) in the Lang Lake, Meen–Dempster, and Pickle Lake greenstone belts, and within rocks of the St. Joseph assemblage (2724 to 2713 Ma) in the Meen–Dempster, Lake St. Joseph and Miminiska–Fort Hope greenstone belts.
4. Copper-nickel-PGE mineralization is associated with probable late-tectonic mafic intrusions located near the southern boundary of the Miminiska–Fort Hope greenstone belt, and in the Lang Lake and Meen–Dempster greenstone belts near the Bear Head fault zone.

5. Porphyry copper-molybdenum-gold mineralization is associated with some felsic intrusions marginal to the greenstone belts, most notably in the Lang Lake and northern Bamaji Lake areas.
6. Algoma-type banded iron formation deposition occurred throughout the volcanic and sedimentary depositional history of the central and eastern Uchi domain.
7. Structurally controlled gold and polymetallic mineralization is likely to have been associated with the collision between the Uchi domain and the Winnipeg River terrane (2720 to 2700 Ma).
8. Rare-metal pegmatite mineralization occurs in association with peraluminous granitic intrusions located in close proximity to major regional fault zones, with known examples near the North Caribou Lake–Totogan Lake shear zone and the Sydney Lake–Lake St. Joseph fault zone. These deposits are typically hosted by late-tectonic to posttectonic intrusions that postdate the peak of regional metamorphism.

# Mineral Occurrences of the Central and Eastern Uchi Domain

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**Ontario Geological Survey**
**Open File Report 6228**
**2009**

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# Introduction

This report provides a summary of geological information for the known mineral occurrences that are located in the central and eastern portions of the Archean Uchi domain of the Superior Province. This project builds upon previous compilation activities carried out in the Meen Lake to Kasagaminnis Lake area by Seim (1993) and in the Fort Hope area by Mason and White (1995), and provides new insights into the metallogeny of the study area that can be used for mineral exploration and land use planning. Funding for this project was made possible through the Ontario Geological Survey's Far North Geological Mapping Initiative. The Far North Geological Mapping Initiative (FNGMI) is a science-based, geological mapping or inventory initiative to better understand the geological history of the Far North and its mineral resources.

# Location and Access

The study area encompasses the central and eastern portions of the Archean Uchi domain (Stott and Rainsford 2006) of the Superior Province, between latitudes 51° and 52°N and from longitudes 86° to 92°W, which are covered by the National Topographic System (NTS) 1:250 000 scale map sheets 52 O, 52 P and 42 M and the northern portion of 52 J (Figures 1 and 2). Much of the study area is remote and difficult to access, with all-weather roads currently limited to the Highway 599/808 corridor that passes through the communities of Mishkeegogamang Ojibway Nation (New Osnaburgh) and Pickle Lake in the west-central portion of the study area, forest access roads that terminate at the community of Slate Falls near the southwestern corner of the study area, and forest access roads that have been advanced into the south-central portion of the study area in the Sim–Morden–Witchwood lakes areas. As a result, much of the study area is only accessible by air and/or water or ice roads in winter.

# Regional Geology and Tectonic History

The North Caribou terrane is part of the Sachigo Superterrane of the Superior Province that represents a Mesoarchean (>2800 Ma) core region upon the northern and southern margins of which crust was added during the Neoarchean (Stott and Rainsford 2006). The Uchi domain forms the southern margin of the North Caribou terrane (Figure 3; Stott and Mueller 2009) and represents an area where significant Neoarchean volcanism and tectonism resulted in the production of new continental crust both prior to and during collision with the Winnipeg River terrane to the south (Percival and Easton 2007). As a result, the Uchi domain comprises Neoarchean volcanic-dominated supracrustal rock sequences (with locally significant accumulations of sedimentary rock) and associated plutons that were built upon, or adjacent to, the earlier Mesoarchean crust (Stott and Rainsford 2006).

Because the Uchi domain is interpreted to have represented a continental-arc tectonic setting on the southern margins of the North Caribou terrane, the accretionary events responsible for its growth show a general southward-younging pattern (Stott 1996). However, a number of exceptions that may represent back-arc settings (e.g., Lang Lake greenstone belt) and segments of older accreted oceanic crust (e.g., Kaminiskag assemblage, southeast of Pickle Lake) have been noted.

The regional geology shown on the accompanying maps (Map 1 and Map 2, *see* back pocket) is taken from the bedrock geology of Ontario (OGS 2003). For a more recent and detailed compilation of the geology for this area, *see* Madon, McIlraith and Stott (2009).

# Historic Mineral Production

The Uchi domain has a long history of economic mineral production, including several current and past-producing gold mines in the Red Lake and Pickle Lake areas, and 2 past-producing base metal mines at Confederation Lake (South Bay volcanogenic massive sulphide (VMS) copper-zinc deposit) and Pickle Lake (Thierry copper-nickel-platinum group elements (PGE) deposit). The past-producing mines in the study area are listed in Table 1 along with their production statistics. The most recent published reserve figures for these deposits are also listed. Full references for the past production and reserve estimates are provided in this report (*see* "Occurrence Geological Descriptions") with the detailed deposit descriptions. Locations are illustrated on accompanying Maps 1 and 2 (*see* back pocket).

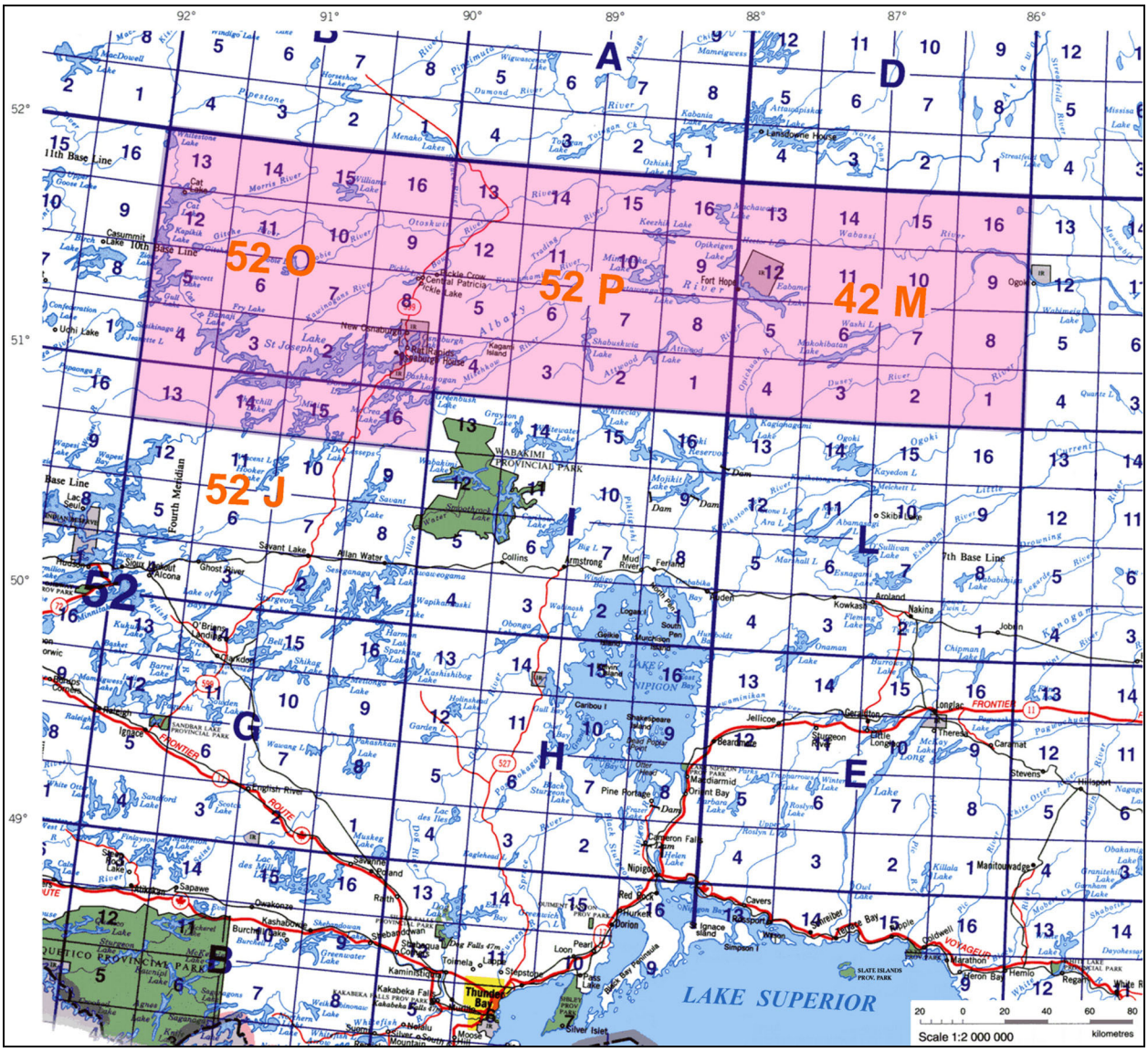



**Figure 1.** General location map of the compilation study area, showing the NTS map areas covered: 52 O Lake St. Joseph area, 52 J Sioux Lookout area (northern portion), 52 P Miminiska Lake area and 42 M Fort Hope area.

**Table 1.** Past-producing mines of the central and eastern Uchi domain.

| Mine Name | UTM Zone | Easting (m) | Northing (m) | Years of Production | Total Production | Reserves |
|---|---|---|---|---|---|---|
| Central Patricia #1 | 15 | 697509 | 5707914 | 1934–1951 | 621 806 ounces Au (17 628 kg) | None published |
| Central Patricia #2 | 15 | 703404 | 5708271 | 1938–1940 | 13 158 ounces Au (373 kg) | 5080 t @ 8.05 g/t Au open pit reserves (1993)[1] |
| Dona Lake | 15 | 702034 | 5699957 | 1988–1997 | 246 500 ounces Au (6988 kg) | 40 000 t @ 5.95 g/t Au (1994)[1] |
| Golden Patricia | 15 | 629877 | 5692270 | 1989–1994 | 619 796 ounces Au (17 572 kg) | None published |
| Pickle Crow | 15 | 704366 | 5709757 | 1935–1966 | 1 446 214 ounces Au (41 000 kg) | 1 418 031 t @ 5.1 g/t Au underground reserves; 52 832 t @ 5.95 g/t open pit reserves (1993)[1] |
| Thierry | 15 | 684148 | 5708433 | 1976–1982 | 51 528 960 kg Cu | 5 570 000 t @ 1.80% Cu & 0.19% Ni measured & indicated resource; 3 403 000 t @ 1.60% Cu and 0.18% Ni inferred resource (2006)[2] |

[1]Historical reserve estimates that cannot be confirmed to comply with the reporting standards of National Instrument 43-101.
[2]Resource estimate determined in compliance with the reporting standards of National Instrument 43-101.

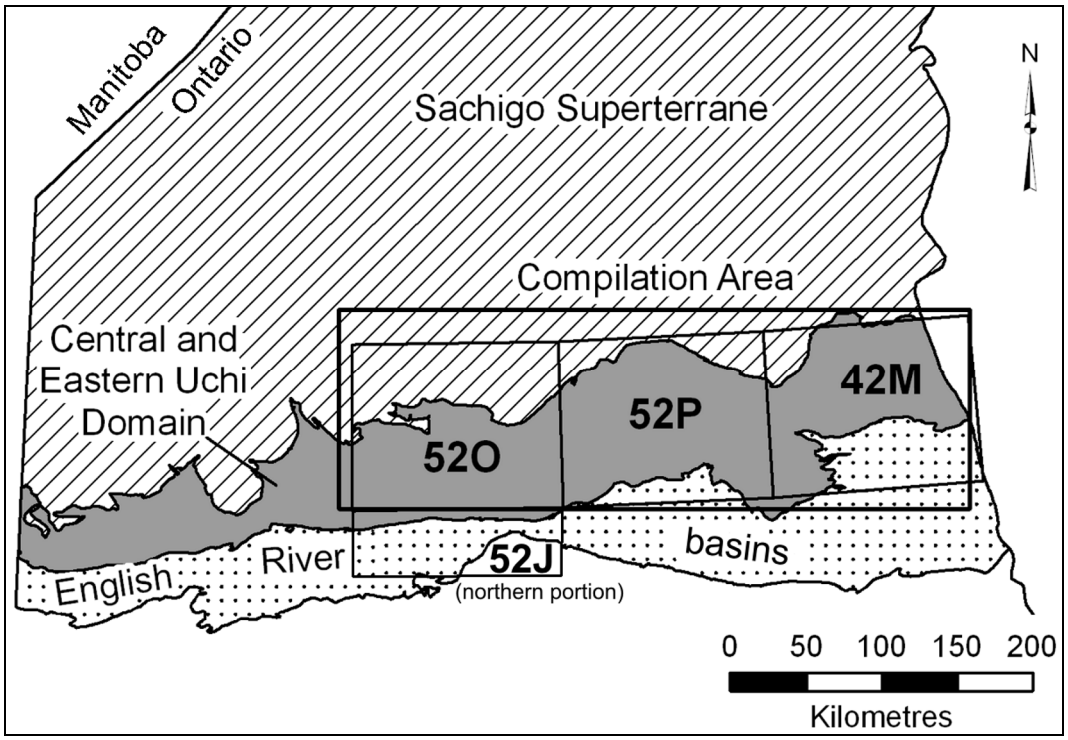



**Figure 2.** The study area as related to the central and eastern portions of the Archean Uchi domain of the Superior Province.

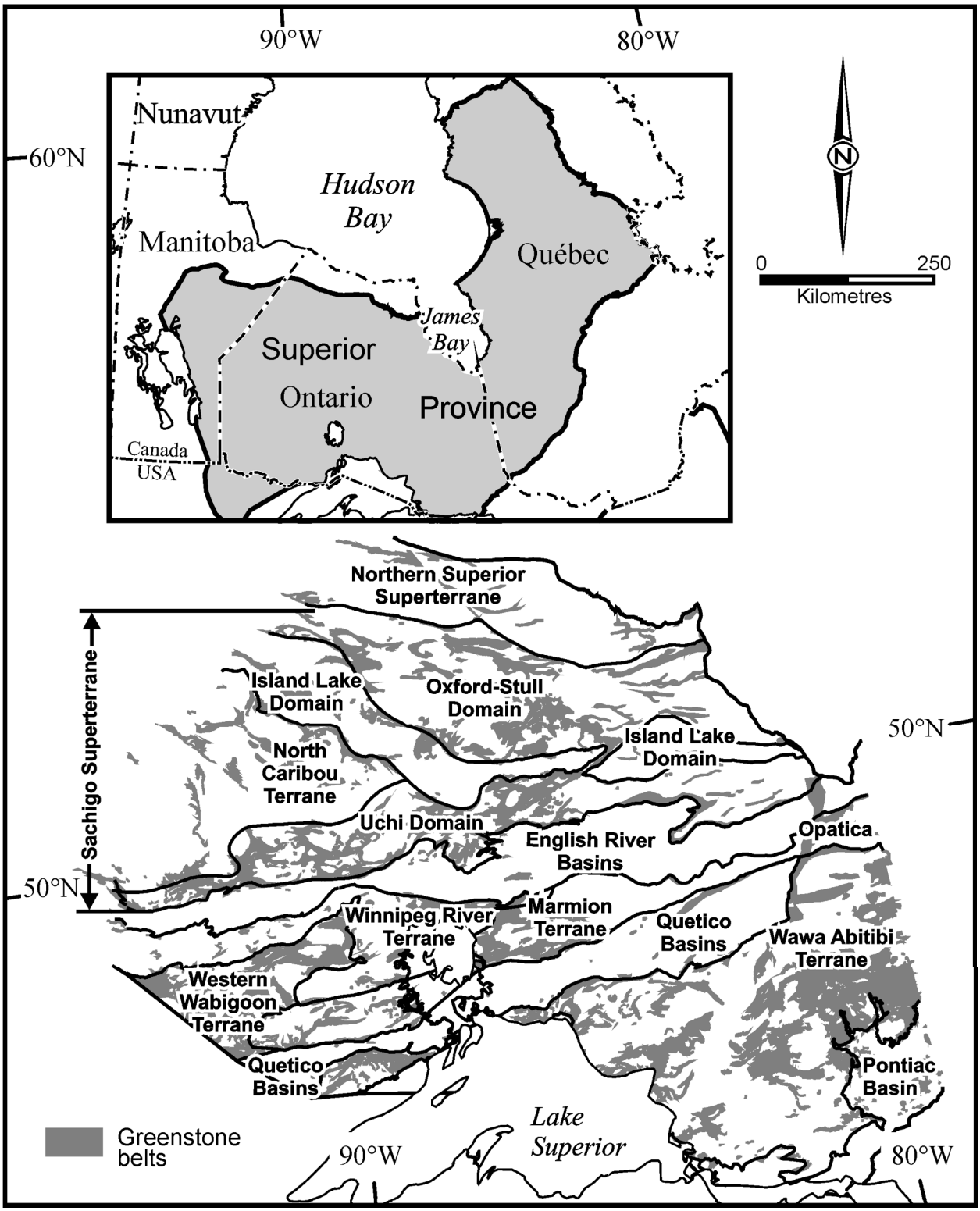



**Figure 3.** Map of the Superior Province in Ontario (approximate area), with terrane and domain subdivisions (*modified from* Stott and Mueller 2009). The entire Superior Province is shown as the shaded area in the inset figure.

**Table 2.** Developed mineral prospects, with reserve estimates, that are located in the central and eastern Uchi domain.

| Deposit Name | Mineral Deposit Inventory Number | UTM Zone | Easting (m) | Northing (m) | Commodities | Reserves* (tonnes) | Year |
|---|---|---|---|---|---|---|---|
| Pollucite Dike | MDI000000000146 | 16 | 411620 | 5722775 | 0.037% $Ta_2O_5$ 2.294% $Cs_2O$ | 340 000 | 2001 |
| Rubellite Dike | MDI000000000147 | 16 | 414100 | 5722605 | 0.032% $Ta_2O_5$ | 800 000 | 2001 |
| Reserve Creek prospect | MDI42M12SE00008 | 16 | 448950 | 5714305 | 1.22 g/t Au | 407 346 | 1982 |
| Zulapa prospect | MDI42M12SW00004 | 16 | 444646 | 5712843 | 7.94 g/t Au | 170 000 | 1970 |
| Norton Lake Cu-Ni-Co-PGE deposit | MDI42M14NW00008 | 16 | 470912 | 5750083 | 0.67% Ni, 0.61% Cu, 0.03% Co, 0.46 g/t PGE | 2 258 654 | 2005 |
| Goss Lake prospect | MDI52P09SW00002 | 16 | 406680 | 5718770 | 7.41 g/t Au | 278 220 | 1985 |
| Howells Lake prospect | MDI52P10SW00007 | 16 | 376000 | 5715075 | 1.98 g/t Au | 84 328 | 1987 |
| Northeast Powderhouse Zone | MDI000000000208 | 15 | 703338 | 5709900 | 3.80 g/t Au | 26 924 | 1989 |
| Southwest Powderhouse Zone | MDI000000000212 | 15 | 702460 | 5708640 | 6.24 g/t Au | 21 336 | 1989 |
| Lake St. Joseph South Zone | MDI000000000332 | 15 | 673885 | 5656250 | 22.19% Fe | 280 030 000 | 1982 |
| Lake St. Joseph North Zone | MDI52O01SW00003 | 15 | 676517 | 5657419 | 23.78% Fe | 348 105 000 | 1982 |
| Hasaga C | MDI52O02NE00006 | 15 | 671088 | 5680364 | 5.074 g/t Au | 50 576 | 1993 |
| Dobie Zone | MDI52O06NE00004 | 15 | 623400 | 5692095 | 5.5 g/t Au | 301 000 | 1993 |
| Umex–Dorothy Lake | MDI52O06NW00003 | 15 | 617883 | 5698053 | 6.17 g/t Au | 236 220 | 1990 |
| Koval–Ohman | MDI52O07SE00002 | 15 | 671171 | 5680674 | 5.81 g/t Au | 471 589 | 1993 |
| Umex G (Kapkichi Lake B) | MDI52O08NW00014 | 15 | 683282 | 5705680 | 0.41% Cu, 0.1% Ni | 7 500 000 | Pre-2001 |
| Umex J&I | MDI52O08NW00016 | 15 | 685659 | 5707220 | 0.4% Cu, 0.12% Ni | 37 000 000 | Pre-2001 |
| Kasagiminnis Lake | MDI52O08SW00007 | 15 | 682186 | 5683313 | Au | 2 900 000 | 1988 |
| Umex K1-1 | MDI52O09SW00004 | 15 | 688324 | 5709823 | 0.39% Cu, 0.11% Ni | 55 000 000 | 1980 |
| Lang Lake | MDI52O12SE00012 | 15 | 595950 | 5717000 | 0.29% Cu | 23 000 000 | 1971 |
| McCombe | MDI52J13NE00004 | 15 | 590613 | 5643482 | 1.3% $Li_2O$ | 2 333 752 | 1956 |
| Belcher–Doran | MDI52J15NE00004 | 15 | 665691 | 5647909 | 19.24% Fe | 381 675 000 | 1960 |
| Eagle (84) Island | MDI52J14NE00004 | 15 | 637362 | 5647295 | 35% Fe | 228 600 000 | 1961 |
| Fish (164) Island | MDI52J14NE00007 | 15 | 632862 | 5646157 | 37% Fe | 101 600 000 | 1961 |
| Wolf (175) Island | MDI52J14NE00008 | 15 | 630595 | 5646285 | 35% Fe | 15 240 000 | 1961 |

*All of these figures represent historical reserve estimates that cannot be confirmed to comply with the reporting standards of National Instrument 43-101.

# Mineral Prospects and Occurrences

In addition to the 6 past-producing mines, 366 mineral prospects and occurrences have been documented through mineral exploration programs and government geological surveys that have been carried out in the central and eastern portions of the Uchi domain since the 1920s. Using the Ontario Geological Survey's Mineral Deposit Inventory (MDI2) classification system (Ontario Geological Survey 2004), these include 25 developed prospects with reserves, 54 prospects (sites with a minimum of 3 significant mineralized intersections), 267 occurrences and 20 discretionary occurrences (sites with interesting mineralization that does not meet occurrence-grade requirements). Table 2 provides a listing of the developed prospects with reserve calculations, including locations, commodities and reserves. Please note that the majority of these reserve estimates are likely to be non-compliant with National Instrument 43-101 requirements.

The mineral occurrences of the study area represent a wide variety of mineral deposit types, including lode gold (vein and replacement), polymetallic vein, mafic to ultramafic intrusion-hosted copper-nickel-PGE, rare-element-bearing pegmatite, volcanogenic massive sulphide (VMS), intrusive porphyry-related copper-molybdenum-gold and Algoma-type banded iron formation.

**Table 3.** Tentative deposit classifications of the central and eastern Uchi domain, based on the deposit types of Rogers et al. (1995).

| Deposit Classification | Principal Commodities | Number of Occurrences |
|---|---|---|
| Lode gold | Au | 252 |
| Polymetallic vein | Au, Ag, Zn, Pb, Cu (±U) | 20 |
| Mafic to ultramafic intrusion-hosted | Cu, Ni, Co, PGE | 15 |
| Rare-element pegmatite | Ta, Li, Rb, Cs | 13 |
| Volcanogenic massive sulphide | Zn, Cu, Pb, Ag | 25 |
| Porphyry | Cu, Mo, Au | 11 |
| Algoma-type iron formation | Fe | 19 |
| Unclassified | various | 17 |

A summary of tentative classification statistics for all of the mineral occurrences of the study area (including mines) is provided in Table 3. These classifications are termed tentative because only limited geological and mineralogical data are available for most occurrences, and mineral deposit models are somewhat subjective.

Detailed descriptions of most of these occurrences, with the exception of those previously described by Seim (1993), are provided in "Occurrence Geological Descriptions" of this report.

# Metallogenic Assessment

The vast majority of the documented mineral occurrences in the central and eastern Uchi domain are located within or immediately adjacent to the volcanic-sedimentary rock sequences that are most commonly referred to as greenstone belts. This area has been subdivided into a number of greenstone belts by Stott and Corfu (1991) as the Miminiska–Fort Hope, Pickle Lake, Lake St. Joseph, Meen–Dempster and Lang Lake greenstone belts (Figure 4). The study area also includes 2 narrow slivers that mark the eastern margins of the Birch–Uchi greenstone belt. Although the individual greenstone belts listed above are useful geographic subdivisions, they provide little insight into the tectonic events that were responsible for the observed distribution of economic mineralization.

Geoscience investigations carried out by a number of researchers, including Stott and Corfu (1991), Stott (1996), Hollings, Stott and Wyman (2000), Johnson (2005), Young et al. (2006), Hamilton et al. (2007) and Percival and Easton (2007), have provided considerable insight into the tectonic history of the central and eastern Uchi domain. These workers have subdivided the supracrustal rocks into individual tectonic assemblages (independent of greenstone belts) that were deposited during discrete time intervals within common depositional or tectonic settings (Stott and Rainsford 2006; *see also* Stott and Mueller 2009 and associated papers), and have identified the tectonic events that were likely to have been responsible for the development of deformation structures, and the emplacement of plutonic rocks (Tables 4 and 5).

A total of 9 tectonic assemblages, deposited over a time interval of approximately 220 my (between >2932 Ma and 2713 Ma), have been identified in the central and eastern Uchi domain. The general geological characteristics and ages of each of these assemblages are listed in Table 4.

The majority of the plutonic rocks and supracrustal rock deformation in the central and eastern Uchi domain can be attributed to the collision between the North Caribou and Winnipeg River terranes (Percival and Easton 2007) at 2720 to 2700 Ma. Table 5 lists some of the major late-tectonic geological structures that crosscut all of the supracrustal rocks and are interpreted to have been active during the North Caribou–Winnipeg River terrane collisional event.

**Table 4.** Supracrustal rock assemblages of the central and eastern Uchi domain.

| Tectonic Assemblage | Dominant Rock Type | Approximate Age (Ma) |
|---|---|---|
| Unnamed assemblage north of Keezhik Lake | Mafic metavolcanic flows with iron formation | >2932 ? |
| Pickle Crow | Mafic metavolcanic flows | >2860 |
| Kaminiskag | Mafic metavolcanic flows | 2842–2836 |
| Meen | Dacitic pyroclastic rocks | 2825 |
| Confederation | Mafic metavolcanic flows overlain by felsic pyroclastic rocks | 2744–2730 |
| St. Joseph | Mafic metavolcanic flows overlain by felsic flows and pyroclastic rocks | 2724–2713 |
| Billett | Turbiditic wacke with interbedded iron formation | >2699 – <2740 |
| Miminiska Lake metasedimentary rocks | Turbiditic wacke with interbedded iron formation | 2710–2700 |
| Eagle Island | Wacke and arkose sandstone with significant interbedded iron formation | <2713 |

**Table 5.** Major fault and shear zones of the central and eastern Uchi domain.

| Structure Name | Location | Orientation |
|---|---|---|
| Bear Head fault zone | Northeast margin of Meen–Dempster greenstone belt, southwest margin of Lang Lake greenstone belt | Northwest |
| Billet Lake deformation zone | Within Meen–Dempster greenstone belt | Northwest |
| Bamaji Lake fault zone | Southwest margin of Meen–Dempster greenstone belt | Northeast |
| Pickle Crow fault and Tarp Lake shear zone | Pickle Lake greenstone belt | Northeast |
| Sydney Lake–Lake St. Joseph fault zone | South margin of Lake St. Joseph greenstone belt | East |
| North Caribou Lake–Totogan Lake shear zone | Keezhik Lake area of Miminiska–Fort Hope greenstone belt | Northwest |
| Unnamed fault zones | Miminiska–Opikeigen Lake area of Miminiska–Fort Hope greenstone belt | Northeast |
| Unnamed deformation zone | Misehkow River area of Lake St. Joseph greenstone belt | Northeast |

A summary of the geological characteristics and economic mineralization associated with the key tectonic features of the central and eastern Uchi domain is provided in the following section.

# SUPRACRUSTAL ROCK ASSEMBLAGES

## Unnamed Assemblage North of Keezhik Lake

The oldest rocks of the study area may be represented by a northwest-striking mafic metavolcanic-dominated sequence found north of Keezhik Lake, at the northern end of the Miminiska–Fort Hope greenstone belt. Stott and Corfu (1991) have suggested that this assemblage may be correlative with the McGruer assemblage (>2932 Ma) of the North Caribou greenstone belt (located to the northwest). The possible correlation of these assemblages is based on similarities in lithologies, particularly a magnetite banded iron formation that forms a discontinuous magnetic anomaly between the North Caribou greenstone belt and Keezhik Lake.

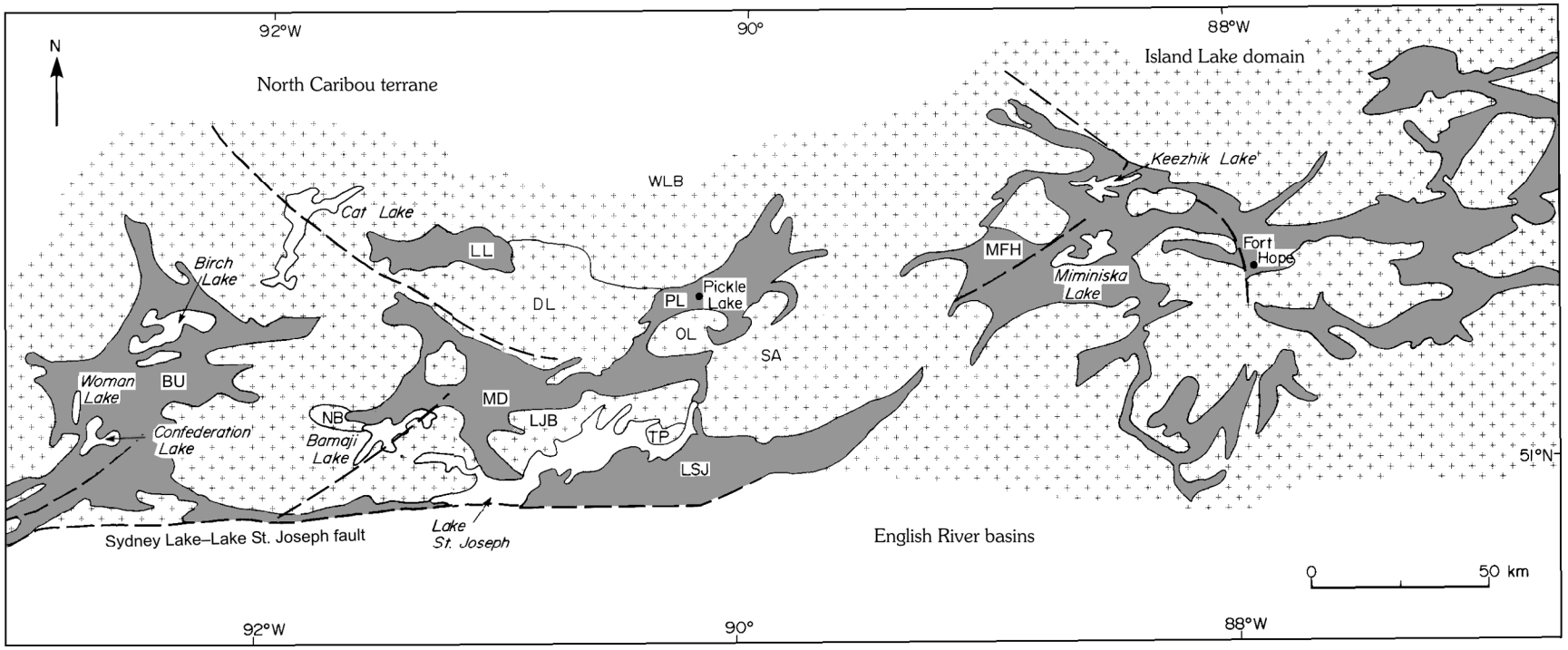



**Figure 4.** Generalized map of greenstone belts and granitic intrusions of the Uchi domain, showing names of the belts, intrusions, and principal towns and lakes (*modified from* Stott and Corfu 1991)

## Pickle Crow Assemblage

The oldest supracrustal rocks that have been identified in the study area were assigned to the Northern Pickle and Pickle Crow assemblages by Stott and Corfu (1991). However, recent work by Young et al. (2006) re-interpreted these rocks, with an age of >2860 Ma, as being part of a single, Pickle Crow assemblage. Rocks of the Pickle Crow assemblage are found in the northwestern portion of the Pickle Lake greenstone belt. This assemblage comprises mainly massive to pillowed basalt intercalated with thin, laterally continuous banded iron formation and small discontinuous lenses of intermediate metavolcanic rocks (Young et al. 2006). All of these lithologies are commonly intruded by quartz-feldspar porphyry dikes. Stott and Corfu (1991) have tentatively correlated similar rocks in the Keezhik Lake area, near the northern margins of the Miminiska–Fort Hope greenstone belt, with the Pickle Crow assemblage. This is an interpretation that is supported by the work of Johnson (2005), who has identified probable Pickle Crow assemblage rocks northeast of Keezhik Lake at Norton Lake.

Metavolcanic rocks of the Pickle Crow assemblage have been intruded by mafic to ultramafic intrusions that have been interpreted by Stott (1996) to form part of this assemblage (i.e., subvolcanic intrusions). A number of these intrusions host copper-nickel-PGE mineralization in the Kapkichi Lake and Norton Lake areas of the Pickle Lake and Miminiska–Fort Hope greenstone belts. The most notable of these deposits is the past-producing Thierry Mine in Pickle Lake.

## Kaminiskag Assemblage

Rocks of the Kaminiskag assemblage (formerly part of the Woman assemblage) (2842 to 2836 Ma) have been identified at the northern margin of the Meen–Dempster (Hollings, Stott and Wyman 2000) greenstone belt, and at the southeastern margin of the Pickle Lake greenstone belt (Young et al. 2006). Similar to the Pickle Crow assemblage, rocks of the Kaminiskag assemblage are dominated by massive to pillowed basalt with at least 2 interflow banded iron formations (Hollings, Stott and Wyman 2000). Rocks of this assemblage in the Meen–Dempster greenstone belt also contain a number of thin, discontinuous units of dacitic to rhyolitic tuff (Hollings, Stott and Wyman 2000), whereas its counterpart in the Pickle Lake greenstone belt contains a laterally continuous (over 8 km in strike length) dacitic tuff horizon (Stott 1996). Stott (1996) also suggested the possibility that the Kaminiskag assemblage rocks in the Pickle Lake greenstone belt are correlative with a similar rock sequence that occurs along strike to the northeast in the Keezhik Lake area of the Miminiska–Fort Hope greenstone belt.

The dacitic tuff horizon found in the Kaminiskag assemblage rocks southeast of Pickle Lake hosts VMS-type zinc-copper-silver-gold mineralization in the vicinity of McCullagh Creek. This appears to be the earliest example of this type of mineralization in the study area.

## Meen Assemblage

The Meen assemblage (2825 Ma) has been recognized exclusively within the Meen–Dempster greenstone belt. This assemblage faces southwest, immediately overlying the rocks of the Kaminiskag assemblage, and underlying a sequence of Confederation assemblage rocks that is located to the southwest. The Meen assemblage is described by Hollings, Stott and Wyman (2000) as a tabular sheet with a 40 km strike length composed of monolithic pyroclastic rocks that are dominantly dacitic in composition with minor rhyolite. The top of this assemblage locally consists of metasedimentary units including chert, marble, arenite and pyrite-graphite schist (Hollings, Stott and Wyman 2000).

The Meen and Kaminiskag assemblages were previously included within the Woman assemblage of Stott and Corfu (1991).

## Confederation Assemblage

Rocks classified as being part of the Confederation assemblage (2744 to 2730 Ma) are found over a wide area of the Uchi domain, including portions of the Meen–Dempster, Lang Lake, Lake St. Joseph and Pickle Lake greenstone belts (Stott 1996; Young et al. 2006; Hamilton et al. 2007). It is currently not known if rocks of this assemblage extend eastward into the Miminiska–Fort Hope greenstone belt.

The Confederation assemblage rocks within the study area have been studied most extensively in the Meen–Dempster greenstone belt, where Stott (1996) indicated that they comprise 2 bimodal volcanic cycles composed of pillowed to massive basaltic flows overlain by dacitic pyroclastic rocks. Young et al. (2006) indicated that at least one of the Meen–Dempster belt volcanic cycles can be correlated with Confederation assemblage rocks of the Pickle Lake greenstone belt through similarities in age, lithologies and aeromagnetic trends.

Stott (1996) indicated that the Confederation assemblage rocks of the Lake St. Joseph greenstone belt likely represent a single bimodal volcanic cycle that has a complex structural relationship (affected by thrust faulting and folding) with younger rocks of the St. Joseph assemblage in the western Lake St. Joseph area. This relationship has been interpreted by Hamilton et al. (2007) to extend further to the northwest into the Fry Lake area of the Meen–Dempster greenstone belt.

The ascribing of rocks in the relatively poorly understood Lang Lake greenstone belt to the Confederation assemblage is based the bimodal nature of the observed metavolcanic rocks and a single age determination of 2749 Ma (Stott and Corfu 1991).

Hollings, Stott and Wyman (2000) have suggested that the wide range of geochemical compositions preserved in rocks of the Confederation assemblage indicate that it was likely formed in a back-arc basin tectonic setting. This is a type of setting that is favourable for the development of VMS-type mineralization (Galley et al. 2006).

To the west of the study area, within the Birch–Uchi greenstone belt, the Confederation assemblage hosts the past-producing South Bay VMS deposit. The McFaulds Lake deposit, which is located under Paleozoic cover to the northeast of the study area, also occurs in rocks of similar age (Rayner and Stott 2005). Although not extensively explored for base metals, a small number of VMS-type mineral occurrences have also been noted in Confederation assemblage rocks of the Meen–Dempster, Lake St. Joseph and Pickle Lake greenstone belts.

## St. Joseph Assemblage

The St. Joseph assemblage (2724 to 2713 Ma) is the youngest volcanic rock–dominated supracrustal assemblage in the eastern portion of the Uchi domain. Rocks of this assemblage disconformably overlie Confederation assemblage rocks in the Lake St. Joseph greenstone belt (Stott and Corfu 1991), and dominate the southern half of both the Lake St. Joseph and Miminiska–Fort Hope greenstone belts. Recent geochronological data reported by Hamilton et al. (2007) indicate that rocks similar in age to the St. Joseph assemblage are also present in the northern Bamaji Lake–Fry Lake area, which is in the southwestern portion of the Meen–Dempster greenstone belt. These rocks were previously thought to be associated with the former Woman (now Kaminiskag and/or Meen) assemblage (Stott and Corfu 1991).

Rocks of the St. Joseph assemblage are described by Stott and Corfu (1991) as comprising arc-like cycles of tholeiitic basalt and calc-alkalic andesite, dacite and rhyolite. The abundance of intermediate to felsic pyroclastic rocks relative to mafic metavolcanic flows is higher in this assemblage than in the underlying Confederation assemblage (Stott and Corfu 1991).

The St. Joseph assemblage represents the final episode of volcanism in the study area (Stott and Corfu 1991) prior to the major regional deformation event associated with the collision of the North Caribou and Winnipeg River terranes.

Although no major VMS-type deposits have been identified in this assemblage, evidence for the existence of mineralizing systems of this type is provided by a number of occurrences in rocks, similar in age to the St. Joseph assemblage, in the Meen–Dempster, Lake St. Joseph and Miminiska–Fort Hope greenstone belts.

## Metasedimentary Rock Assemblages

Significant accumulations of metasedimentary rocks have been noted at a number of locations in the study area by Stott and Corfu (1991) and Hamilton et al. (2007). These include the rocks of the Billett assemblage in the Meen–Dempster greenstone belt, the Eagle Island assemblage of the Lake St. Joseph greenstone belt, the metasedimentary rocks of the Miminiska Lake area, and accumulations of metasedimentary rocks at the southern margins of the Uchi domain, in the transition area to the English River basins (formerly Subprovince or domain) between the Lake St. Joseph and Miminiska–Fort Hope greenstone belts. The available geochronologic data (Stott and Corfu 1991; Hamilton et al. 2007) indicate that these assemblages accumulated in sedimentary basins that postdate St. Joseph assemblage volcanism.

These assemblages are generally dominated by turbiditic clastic sedimentary rocks, and may contain locally significant accumulations of banded iron formation. Notable iron formation deposits have been identified in the Soules Bay area of Lake St. Joseph, at Miminiska Lake, and in the area between the Lake St. Joseph and Miminiska–Fort Hope greenstone belts.

Volcanogenic massive sulphide-type mineralization has also been noted in metasedimentary rocks of the Billett assemblage, adjacent to similarly mineralized metavolcanic rocks of the St. Joseph assemblage, in the Fry Lake area of the Meen–Dempster greenstone belt (Seim 1993).

# LATE TECTONIC STRUCTURES AND INTRUSIONS

The collision between the North Caribou and Winnipeg River terranes is interpreted to have occurred between 2720 and 2700 Ma (Percival and Easton 2007), and resulted in the development (and/or reactivation) of a number of significant fault and/or shear zones, as well as the emplacement of numerous late-tectonic to posttectonic intrusions. Economic lode gold mineralization is closely associated with the major deformation zones, whereas late-tectonic to posttectonic intrusions that are also commonly in close proximity to these structures host occurrences of mafic to ultramafic intrusion-hosted copper-nickel-PGE, porphyry–alkalic porphyry and rare metal pegmatite-type mineralization. The emplacement of these (and possibly some earlier) intrusions may have also imposed strain fabrics in the surrounding rocks that provided favourable structures for lode gold-type mineralization (Stott 1996). A notable example of this type of setting is the past-producing Dona Lake Mine, which is located within the strain aureole of the Ochig Lake pluton.

The possible relationships between some of the major deformation zones and associated intrusions with economic mineralization are discussed below.

## Bear Head Fault Zone

The major structures that are interpreted to have an association with gold mineralization include 2 major, regional-scale, northwest-striking, transcurrent faults. One of these structures is the Bear Head fault zone, which occurs along the northeastern margin of the Meen–Dempster greenstone belt and the southwestern margin of the Lang Lake greenstone belt. This structure is closely associated with the past-producing Golden Patricia Mine, which was interpreted by Osmani and Stott (1988) to occur in a splay structure related to the Bear Head fault zone. Numerous other gold deposits and occurrences in the Meen–Dempster and Lang Lake greenstone belts are considered to be associated with similar structures related to the Bear Head fault zone. A second, approximately parallel, structure (Billett Lake deformation zone) is also closely associated with a number of gold occurrences in the central portions of the Meen–Dempster greenstone belt to the southwest.

Numerous late-tectonic, copper-nickel-PGE–mineralized mafic intrusions occur within the Lang Lake and Meen–Dempster greenstone belts in close proximity to the Bear Head fault zone and probable subsidiary structures. This is not surprising, given that this type of mineralization occurs elsewhere in the Superior Province (e.g., Lac des Iles) in late-tectonic mafic intrusions that are associated with major faults (Rogers et al. 1995). The porphyry-style copper-gold-molybdenum deposit at Lang Lake is also proximal to the Bear Head fault zone.

Although pegmatite-hosted rare metal and uranium mineralization has not been documented in this study area, it should be noted that rare metal- and uranium-bearing pegmatite intrusions are known to occur in proximity to the Bear Head fault zone further to the northwest, in the Favourable Lake–North Spirit Lake area.

## North Caribou Lake–Totogan Lake Shear Zone

The North Caribou Lake–Totogan Lake shear zone is the other major regional-scale, northwest-striking structure in the study area. The southeastern end of this structure is located in the vicinity of Eabamet Lake in the centre of the Miminiska–Fort Hope greenstone belt. It extends northwest, passing to the northeast of Keezhik Lake, where it approximately coincides with the greenstone–granite boundary. Numerous gold occurrences in the Keezhik Lake area are interpreted to be associated with structures related to this fault zone. Gold mineralization at the Musselwhite Mine in the North Caribou greenstone belt is also considered to be related to this structure (Cheatle 2006).

The Kawitos Lake batholith is located at the southeastern end of the North Caribou Lake–Totogan Lake shear zone. This intrusion is a peraluminous granite that is considered to be the parental intrusion for a number of rare element-bearing pegmatite deposits located in the Lilypad Lakes area (Breaks and Tindle 2004), near the northern margin of the batholith. The occurrence of this type of mineralization in close association with the North Caribou Lake–Totogan Lake shear zone is consistent with the observations of Rogers et al. (1995), who noted that peraluminous magmas are typically associated with collisional processes, and often occur near major regional fault systems.

## Structures of the Pickle Lake Area

A number of significant northeast-striking deformation zones have been identified in the Pickle Lake, Miminiska–Fort Hope, Meen–Dempster and Lake St. Joseph greenstone belts. All of these structures have a close spatial association with gold mineralization, with the most notable being the Pickle Crow fault. This structure is associated with the past-producing Pickle Crow and Central Patricia No. 2 gold mines. Gold mineralization at these locations occurs in quartz veins and sulphidized iron formation, where splay faults crosscut banded iron formation. Numerous other gold occurrences in the northern portions of the Pickle Lake greenstone belt are located in an area that is crosscut by a number of northeast-striking deformation zones, including the Cohen–MacArthur fault and Tarp Lake shear zone. Similar to Pickle Crow, these occurrences generally appear to be found in subsidiary structures (e.g., splays, fracture zones in competent lithologies) that are likely to be related to the major deformation zones.

It is also interesting to note that the 4 Pickle Lake area past-producing mines (including Central Patricia No. 1 and Dona Lake) are located in close proximity to a major northwest-striking Proterozoic diabase dike. The diabase clearly postdates the gold mineralization, which Young et al. (2006) suggested occurred at some point in the time interval of 2716 to 2697 Ma (i.e., close to the time of emplacement of the Hooker–Burkoski stock). However, the close spatial association of the Archean Webb Lake, Hooker–Burkoski and Kibler Lake stocks along the dike's trend, suggests the existence of an unexposed, earlier, deep-crustal, northwest-striking structure that had an influence on the emplacement of intrusions and the localization of significant gold mineralization in the Pickle Lake area.

The Kibler Lake stock, located at the northern margin of the Pickle Lake greenstone belt, is notable in that it may have a genetic relationship to local gold mineralization. Recent diamond-drilling data collected from this overburden-covered intermediate to felsic intrusion (Le Couteur 2000) revealed characteristics (e.g., magnetite-rich phases) that suggest that it may be associated with the sanukitoid suite. Beakhouse (2007) has suggested that sanukitoid magmatism may be related to the same tectonic events responsible for Archean lode gold mineralization. Lamprophyre intrusions, which Beakhouse (2007) noted may be genetically related to sanukitoid intrusions, are also common in the Pickle Lake area.

## Northeast-Striking Structures of the Miminiska Lake–Fort Hope Area

A number of northeast-striking deformation zones have been mapped or geophysically inferred in the area extending from Miminiska Lake to Fort Hope. Notable examples are found at Howells Lake, to the south of Miminiska Lake and immediately to the east of Fort Hope. Numerous lode gold occurrences have been documented in close proximity to these structures.

Quartz-carbonate vein–hosted and sulphidized iron formation-hosted gold occurrences are found in this area. Gold-copper-tungsten occurrences in the Reserve Creek area, to the east of Fort Hope, exhibit mineralization and alteration patterns suggesting that they may be of the alkalic porphyry-type described by Rogers et al. (1995).

## Northeast-Striking Structure in the Lake St. Joseph Greenstone Belt

Vein and replacement lode gold mineralization is associated with a northeast-striking deformation zone that parallels the Misehkow River at the eastern end of the Lake St. Joseph greenstone belt. This structure may be the strike extension of the deformation zone at Howells Lake in the Miminska–Fort Hope greenstone belt.

## Bamaji Lake Fault Zone

The Bamaji Lake fault zone is a northeast-striking structure located at the southwestern end of the Meen–Dempster greenstone belt. Numerous polymetallic (gold-silver-lead-zinc-copper) vein and hydrothermal uranium-gold occurrences have been noted in close proximity to this structure and to a number of east-striking splay faults that extend westward through the North Bamaji pluton and the adjacent supracrustal rocks. A number of porphyry-type molybdenum occurrences have also been documented (Seim 1993 and Wallace 1985) nearby within the North Bamaji pluton.

The styles of mineralization in the vicinity of northern Bamaji Lake are somewhat unique to the study area, and are interpreted to likely represent deposits formed at a higher crustal level than elsewhere in the central and eastern Uchi domain. This is because polymetallic veins, porphyry deposits and hydrothermal uranium-gold deposits (e.g., iron oxide-copper-gold (IOCG also known as olympic dam-type deposits)) are generally expected to occur in high-level tectonic settings (Rogers et al. 1995).

## Sydney Lake–Lake St. Joseph Fault Zone

The Sydney Lake–Lake St. Joseph fault zone is a major regional structure that marks the Uchi domain–English River basins boundary west of Pashkokogan Lake. The only significant mineralization known to occur in proximity to this structure in the study area are rare-metal pegmatite occurrences in the Lake St. Joseph area, between Root Lake and Pashkokogan Lake. Such occurrences are indicated by Rogers et al. (1995) to typically occur along terrane boundaries (e.g., Uchi–English River), and are commonly coincident with major regional faults.

## Mafic to Ultramafic Intrusions Near the Uchi Domain–English River Basins Boundary

Numerous late-tectonic to posttectonic, mafic to ultramafic intrusions occur near the southern end of the Miminiska–Fort Hope greenstone belt, in the transition zone between the Uchi domain and English River basins. A number of mafic to ultramafic intrusion-hosted copper-nickel-PGE occurrences have been documented in a series of these intrusions found in the Shabuskwia Lake to Weese Lake area, near the boundary of the Shabuskwia Lake batholith. This setting is similar to occurrences reported by Rogers et al. (1995) at the margins of batholiths in the Quetico Subprovince.

## SUMMARY

Based on the discussion provided above, the following chronology of metallogenic events is proposed for the central and eastern portions of the Uchi domain.

1. Mafic to ultramafic intrusion-hosted copper-nickel-PGE mineralization occurred in rocks of the Pickle Crow assemblage in the Pickle Lake and Miminiska–Fort Hope greenstone belts (>2860 Ma).
2. Volcanogenic massive sulphide (VMS)-type mineralization occurred in felsic volcanic rocks of the Kaminiskag (formerly Woman) assemblage in the Pickle Lake greenstone belt (2842 to 2836 Ma).
3. Later VMS-type mineralization occurred in association with volcanic rocks of the Confederation assemblage (2744 to 2730 Ma) in the Lang Lake, Meen–Dempster, and Pickle Lake greenstone belts, and within rocks of the St. Joseph assemblage (2724 to 2713 Ma) in the Meen–Dempster, Lake St. Joseph and Miminiska–Fort Hope greenstone belts.

4. Copper-nickel-PGE mineralization is associated with probable late-tectonic mafic intrusions located near the southern boundary of the Miminiska–Fort Hope greenstone belt, and in the Lang Lake and Meen–Dempster greenstone belts near the Bear Head fault zone. Although no definitive information is available to estimate the age of the mineralized intrusions, Stott (1996) indicated that the Kawashe gabbro, located near the Bear Head fault zone, is likely to have intruded at some point between 2744 Ma (maximum age of volcanism in adjacent Confederation assemblage) and 2722 Ma (age of crosscutting Kawashe Lake granitoid stock).
5. Porphyry copper-molybdenum-gold mineralization is associated with some felsic intrusions marginal to the greenstone belts, most notably in the Lang Lake and northern Bamaji Lake areas. Although no definitive information is available to estimate the age of these occurrences, such mineralization typically postdates the constructive phase of greenstone belt development (Rogers et al. 1995).
6. Algoma-type banded iron formation deposition occurred throughout the volcanic and sedimentary depositional history of the central and eastern Uchi domain. However, the most significant deposits are typically found in the late (circa 2710 to 2700 Ma) sedimentary basins located near the southern domain boundary.
7. Structurally controlled gold and polymetallic mineralization is likely to have been associated with the collision between the Uchi domain and the Winnipeg River terrane (2720 to 2700 Ma; Percival et al. 2006). In the Pickle Lake greenstone belt, this event postdates volcanism in the Confederation assemblage (>2739 Ma) and predates the emplacement of the posttectonic Hooker–Burkoski stock (2697 to 2716 Ma; Young et al. 2006).
8. Rare-metal pegmatite mineralization occurs in association with peraluminous granitic intrusions located in close proximity to major regional fault zones, with known examples near the North Caribou Lake–Totogan Lake shear zone and the Sydney Lake–Lake St. Joseph fault zone. Breaks, Selway and Tindle (2003) indicated that these deposits are typically hosted by late-tectonic to posttectonic intrusions that postdate the peak of regional metamorphism.

# Recommendations for Exploration

Figures 5 to 9 illustrate the distribution of the following types of mineral deposits across the study area (the bedrock geology shown on these figures is from OGS 2003):

- shear zone-hosted lode gold and polymetallic deposits (*see* Figure 5)
- mafic to ultramafic intrusion-hosted copper-nickel-PGE deposits (*see* Figure 6)
- volcanogenic massive sulphide deposits (*see* Figure 7)
- Algoma-type iron formation (*see* Figure 8)
- felsic intrusion-associated deposits, including porphyries and pegmatites (*see* Figure 9)

This information provides a general picture of the distribution of these deposits that can be used to guide exploration programs in the area. Additional recommendations pertaining to the specific deposit types are provided below.

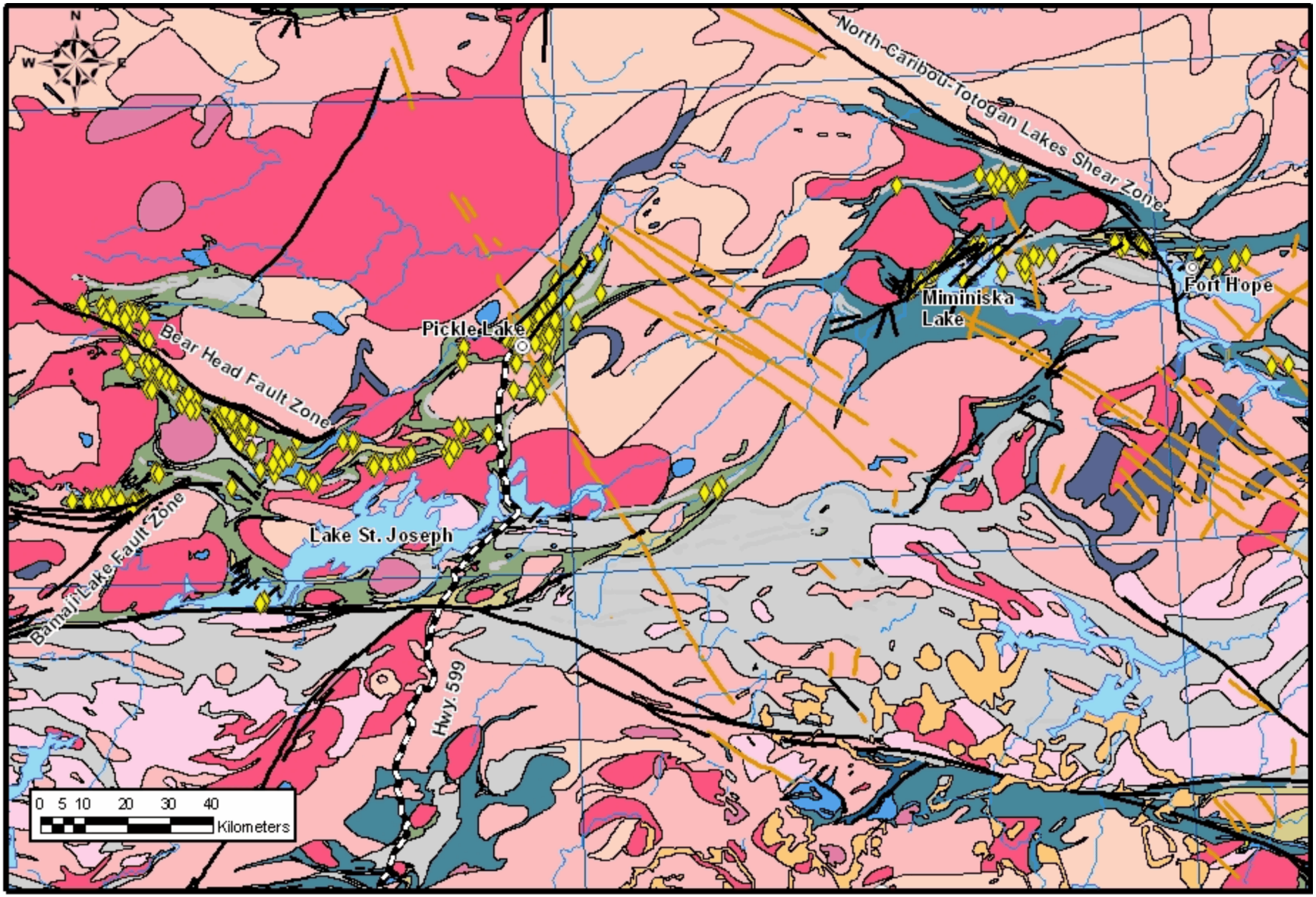



**Figure 5.** Generalized map of shear zone-hosted lode gold and polymetallic occurrences (yellow-filled vertical diamonds; *see* Map 1 and Map 2 for more details; bedrock geology *from* OGS 2003).

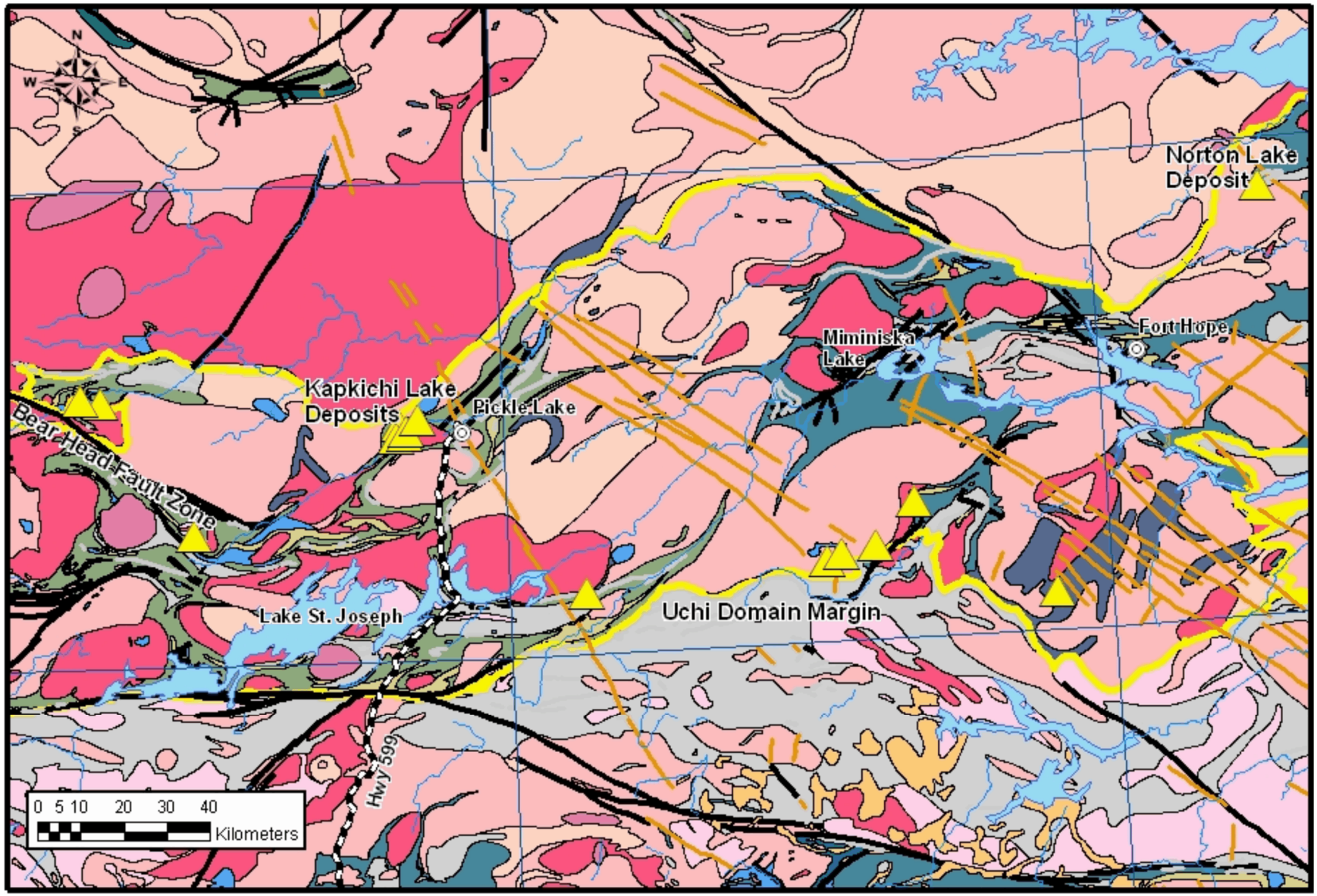



**Figure 6.** Generalized map of mafic to ultramafic intrusion-hosted Cu-Ni-PGE occurrences (yellow-filled triangles; *see* Map 1 and Map 2 for more details; bedrock geology *from* OGS 2003).

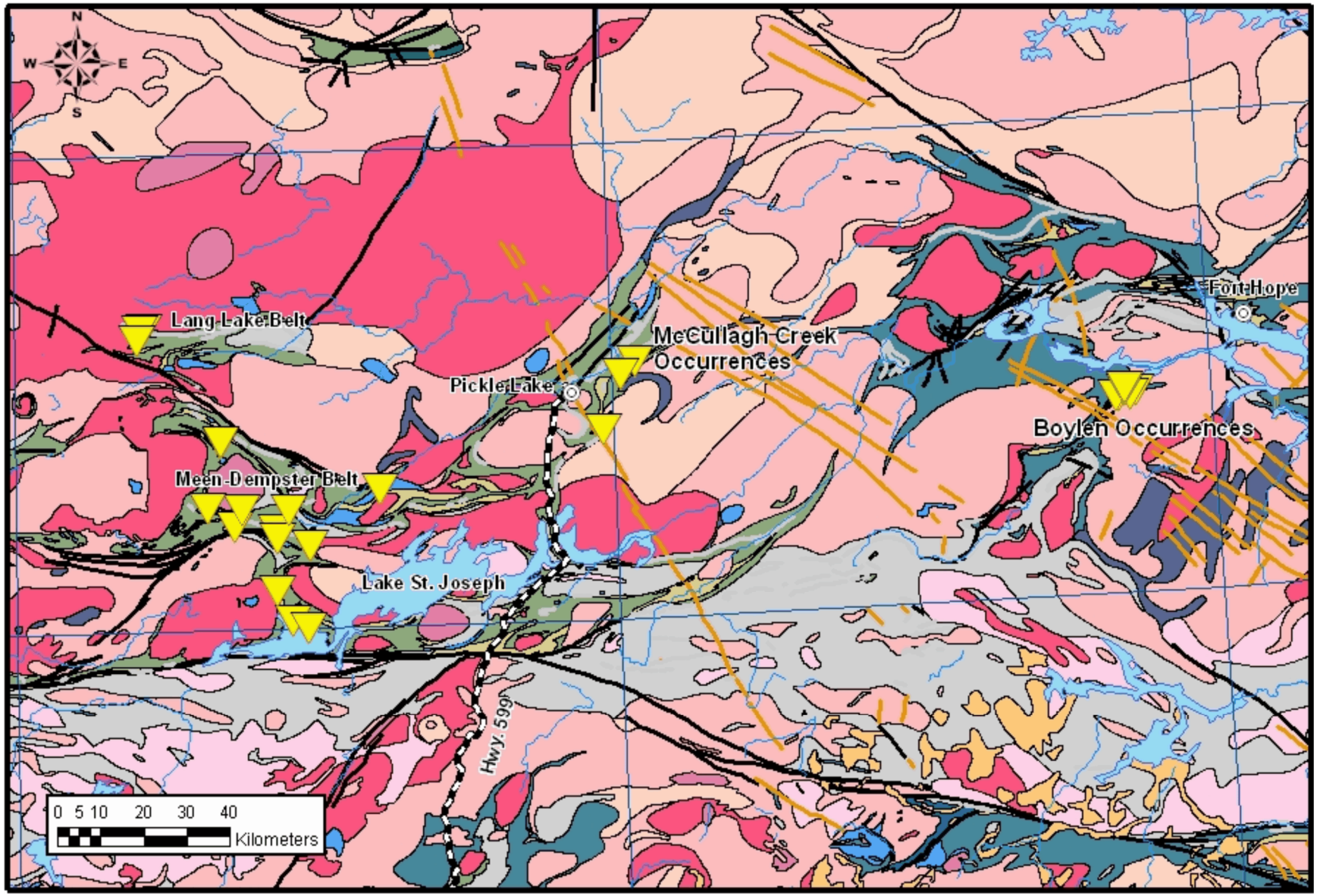



**Figure 7.** Generalized map of volcanogenic massive sulphide (VMS)-type occurrences (yellow-filled pointing-down triangles; *see* Map 1 and Map 2 for more details; bedrock geology *from* OGS 2003).

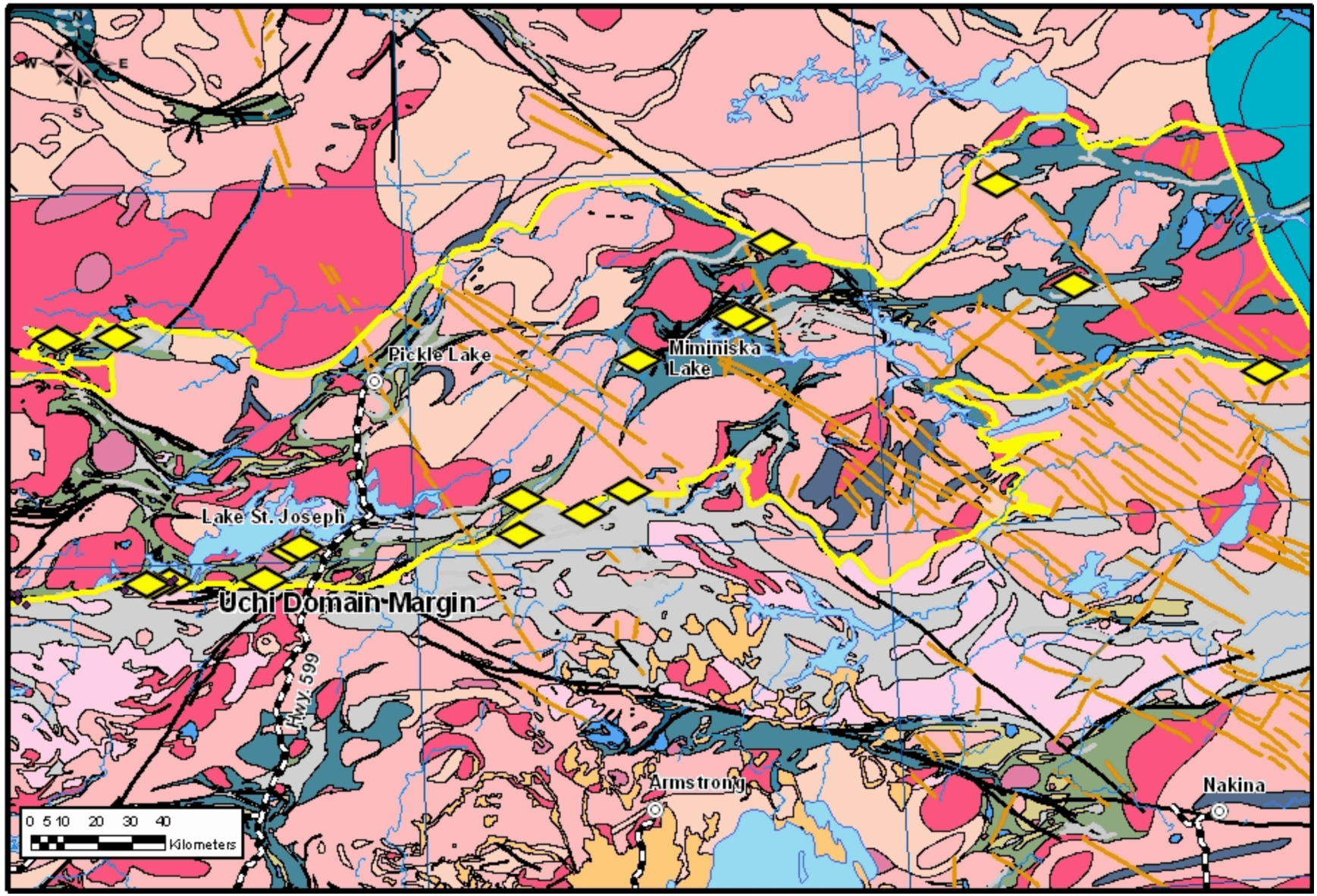



**Figure 8.** Generalized map of Algoma-type iron formation occurrences (yellow-filled horizontal diamonds; *see* Map 1 and Map 2 for more details; bedrock geology *from* OGS 2003).

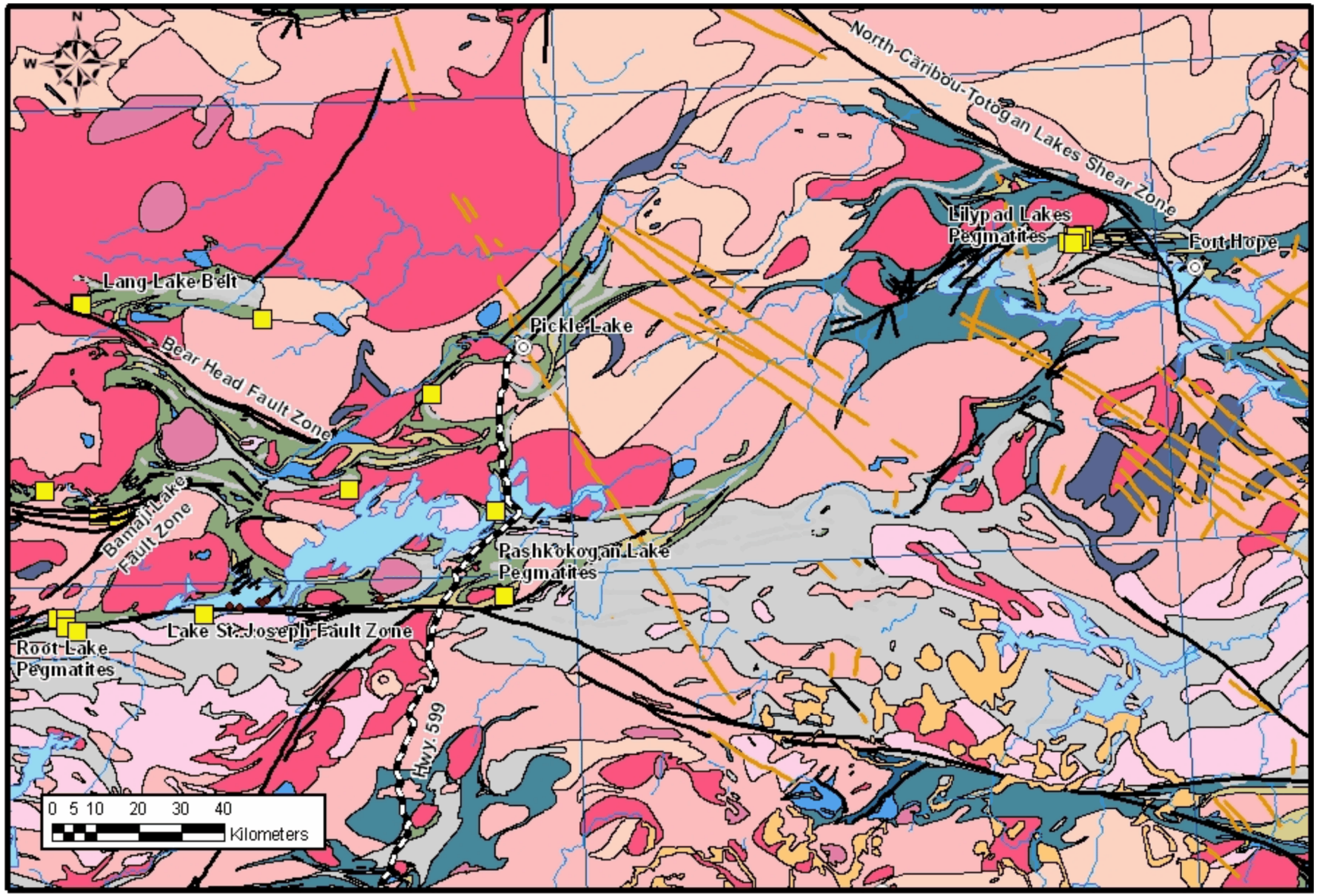



**Figure 9.** Generalized map of felsic intrusion-associated occurrences (yellow-filled squares; *see* Map 1 and Map 2 for more details; bedrock geology *from* OGS 2003).

## SHEAR ZONE-HOSTED LODE GOLD AND POLYMETALLIC DEPOSITS

The majority of the shear zone-hosted lode gold and polymetallic deposits in the central and eastern Uchi domain have a close spatial association with major northwest- or northeast-striking deformation zones (*see* Figure 5). Although the major structures may play a significant role in mineralization, it should be noted that the most significant deposits (e.g., past-producing Central Patricia, Golden Patricia and Pickle Crow mines) are typically hosted within splay structures that are oblique to the major deformation zones.

Therefore, it is recommended that prospecting efforts along the major deformation zones focus on the identification of crosscutting structures and lithologic contacts. Prospective lithologic contacts include those where significant competency contrasts occur and/or where the mineralogy of a rock type(s) is favourable for the precipitation of gold (e.g., oxide-facies banded iron formation).

## MAFIC TO ULTRAMAFIC INTRUSION-HOSTED COPPER-NICKEL-PLATINUM GROUP ELEMENT DEPOSITS

Mafic to ultramafic intrusion-hosted copper-nickel-platinum group element deposits are known to occur in subvolcanic intrusions in the >2860 Ma Pickle Crow assemblage, and in late-tectonic to posttectonic intrusions in close proximity to major regional transcurrent faults and the Uchi domain–English River basins boundary zone (*see* Figure 6). As a result, exploration for this type of deposit is warranted in these broadly defined areas.

The Uchi domain–English River basins boundary zone to the south and east of Fort Hope is an especially notable exploration target, as several unexplored mafic intrusions have been mapped in this area.

## VOLCANOGENIC MASSIVE SULPHIDE-TYPE DEPOSITS

The central and eastern Uchi domain has not experienced significant exploration for volcanogenic massive sulphide (VMS) deposits in the past. However, a number of VMS-type occurrences are known to exist in the study area (*see* Figure 7), in association with metavolcanic rocks of the Kaminiskag and/or Meen assemblages (2836 Ma), the Confederation assemblage (2744 to 2730 Ma), and the St. Joseph assemblage (2724 to 2713 Ma). Therefore, exploration for VMS-type deposits is warranted in areas of these assemblages with favourable geology (e.g., bimodal volcanic sequences).

Rocks of the Meen–Dempster greenstone belt (similar in age to the Confederation assemblage (2744 to 2730 Ma)) have been interpreted to have been deposited in a tectonic setting favourable for VMS-type mineralization (i.e., a back-arc basin) and the Confederation assemblage hosts the past-producing South Bay Mine. Therefore, these rocks of the Meen–Dempster greenstone belt are considered to be the most favourable target for VMS exploration. It is also noteworthy that Young et al. (2006) and Hamilton et al. (2007) have shown that the extent of rocks, similar in age to the Confederation assemblage, in the Pickle Lake and Meen–Dempster greenstone belts is much greater than previously believed.

Areas of exploration interest for VMS-type mineralization within the St. Joseph assemblage that warrant further attention include the Auger Lake–Kawitos Lake area of the Miminiska–Fort Hope greenstone belt, where VMS-favourable lithologies, including a mixture of mafic and felsic to intermediate metavolcanic rocks have been mapped, and in the Fry Lake area of the Meen–Dempster greenstone belt where a number of interesting base metal occurrences have been documented near the contact between metavolcanic rocks of the St. Joseph assemblage and metasedimentary rocks of the Billett assemblage.

Significant VMS-type mineralization (e.g., horizon at McCullagh Creek zinc prospect) occurs within an intermediate to felsic metavolcanic horizon in the Kaminiskag assemblage, southeast of Pickle Lake. Therefore, similar units within the Kaminiskag and/or Meen assemblages of the Pickle Lake and Meen–Dempster greenstone belts also have the potential to host VMS-type mineralization.

# ALGOMA-TYPE IRON FORMATION DEPOSITS

The largest accumulations of Algoma-type iron formation in the central and eastern Uchi domain are found in the metasedimentary basins located near the Uchi domain–English River basins boundary (*see* Figure 8). As a result, these metasedimentary basins are considered to be the most favourable exploration areas for this type of deposit.

# FELSIC INTRUSION-ASSOCIATED DEPOSITS

## Porphyry-Type Deposits

Porphyry-type molybdenum-copper-gold mineralization has been noted within and adjacent to a number of late-tectonic to posttectonic felsic intrusions along the margins of greenstone belts in the study area. The most notable areas of known mineralization are found at the western end of the Lang Lake greenstone belt, and in the northern Bamaji Lake area, at the western end of the Meen–Dempster greenstone belt (*see* Figure 9). Gold-copper-tungsten occurrences in the Miminiska–Fort Hope greenstone belt at Reserve Creek and Keezhik Lake also have characteristics that are suggestive of alkalic porphyry-type mineralization.

Porphyry-type mineralization is noted in close proximity to major deformation zones, including the Bear Head, Bamaji Lake and North Caribou Lake–Totogan Lake fault zones. The Bear Head fault zone is especially notable, as porphyry-type mineralization is found in close proximity to this structure at many locations further to the northwest, within and adjacent to the North Spirit Lake and Favourable Lake greenstone belts (Puumala 2007). Based on this observation, it is recommended that exploration for these types of deposits focus on intrusions located in close proximity to the major regional-scale deformation zones.

## Rare-Metal Pegmatite Deposits

Rare-metal pegmatites found in the study area occur in association with peraluminous intrusions in close proximity to the Sydney Lake–Lake St. Joseph fault zone and the North Caribou Lake–Totogan Lake shear zone (*see* Figure 9). The Bear Head fault zone is also associated with rare metal- and uranium-bearing pegmatite mineralization further to the northwest, adjacent to the North Spirit Lake and Favourable Lake greenstone belts (Puumala 2007). Therefore, it is recommended that exploration for pegmatite deposits focus on intrusions proximal to the major regional-scale deformation zones.

# Occurrence Geological Descriptions

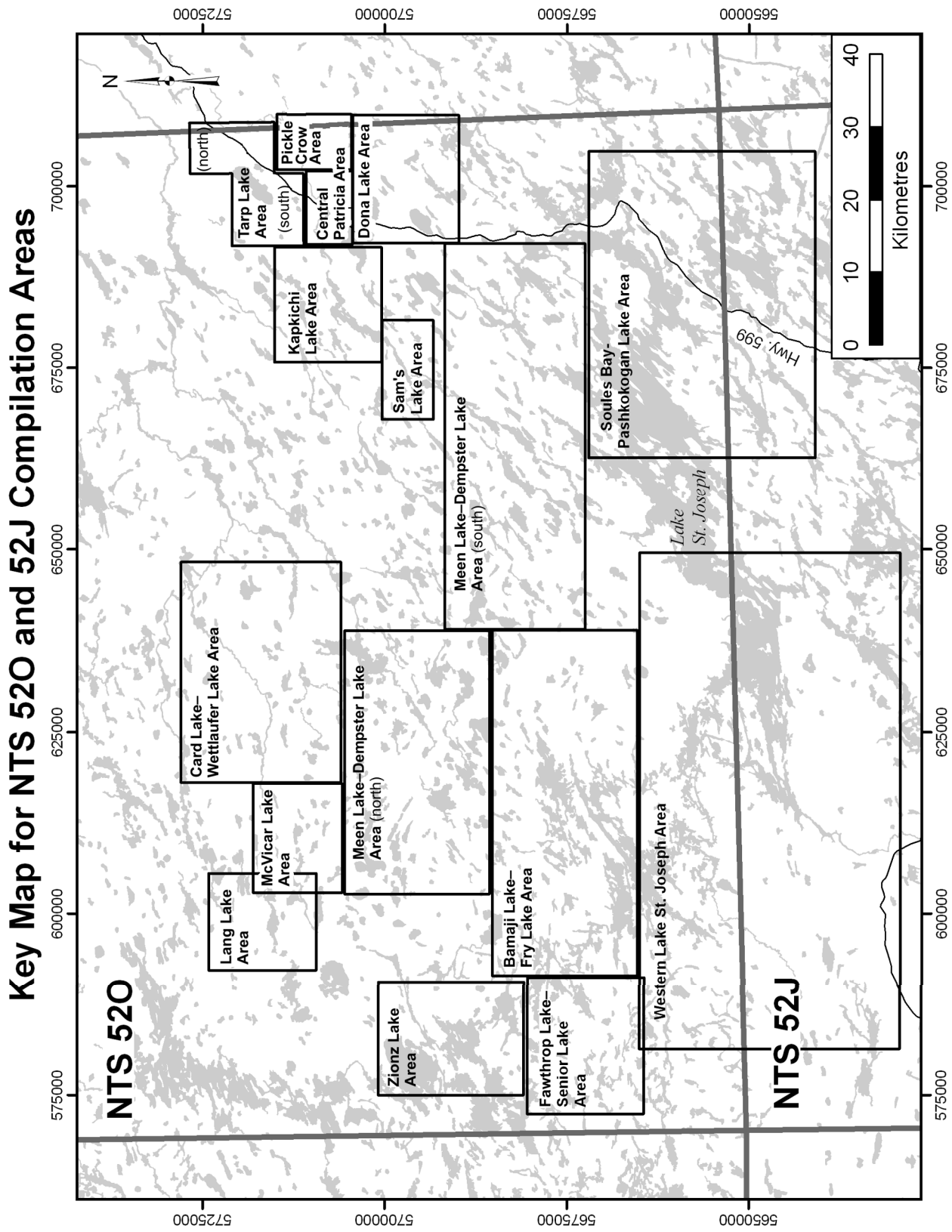
The following 3 sections of this report present geological descriptions of the approximately 360 mineral occurrences that have been documented in the central and eastern Uchi. These descriptions are grouped together as follows: i) NTS 52 O Lake St. Joseph area – NTS 52 J Sioux Lookout area (northern portion) (shown on Map 1); ii) NTS 52 P Miminiska Lake area and iii) NTS 42 M Fort Hope area (both shown on Map 2).

Within each NTS map sheet area, the occurrence descriptions have been organized into geographic areas that generally correspond to clusters of mineral occurrences located in a similar geologic setting (e.g., greenstone belt). General descriptions of the area exploration history and geology are provided, followed by geological descriptions of the individual occurrences. The Universal Transverse Mercator (UTM) co-ordinates using North American Datum 1983 (NAD83), map references (NTS number; township name or "MNDM Township Area" name), and MDI reference number(s) are also listed for each occurrence, along with commodity, status, deposit classification and tectonic assemblage information.

In the NTS numbering system, each 1:250 000 scale map area (e.g., NTS 52 O) is subdivided into 16 map areas at a scale of 1:50 000 (e.g., NTS 52 O/12). In regions of Ontario without Townships, each of these 16 NTS map areas is subdivided into 4 named "base map areas" (BMA). These BMAs are based on direction (i.e., NE, SE, SW and NW; e.g., NTS 52 O/12SW); each BMA is named, usually after a prominent feature. In the MNDM Mineral Deposit Inventory (MDI2), these BMA names are entered under the heading "MNDM Township Area"; this term is used in the following mineral occurrence descriptions. Figure 10 (*see* back pocket) shows the area names in conjunction with locations of the mineral occurrences.

The occurrences compiled in this report correspond to the mineral occurrences shown on the 1:250 000 scale maps that accompany this report (*see* Maps 1 and 2 for locations shown with geology, back pocket). Brief data summaries for each of the illustrated occurrences are provided on the map margin.

References cited for the main text and for the descriptions within each of the 3 NTS sections are provided separately at the end of this report.




Key map for NTS 52 O and 52 J (northern portion) compilation areas

# MINERAL OCCURRENCES OF THE CENTRAL AND EASTERN UCHI DOMAIN: LAKE ST. JOSEPH AREA (NTS 52 O) AND SIOUX LOOKOUT AREA (NTS 52 J: NORTHERN PORTION)

## Summary of Occurrence Areas: Lang Lake Greenstone Belt

### LANG LAKE AREA

AOI 3 Occurrence
Castlebar #3 (Stoughton Lake #1) Occurrence
Lang Lake Prospect
Saddle Creek Occurrence
Saddle Lake Occurrence
Sample 0134 Occurrence
Sample 2056 Occurrence
Stoughton Lake #2
Stoughton Lake #4 (AOI1) Occurrence

### McVICAR LAKE AREA

AGM Island
AGM Zone
Altered Zone
Apple Island Zone
Boyes Lake
Boyes Lake South
Chellow Vein / Cliff Zone (McVicar Lake #7)
Dougie Lake East
Dougie Lake West
Hoey Syndicate (McVicar Lake #5)
Jay Zone
Lang Lake–Belore
McVicar Lake #4
McVicar Lake Copper
McVicar Lake East
North Flexure Zone
Point Showing
Quartz-Pyrite Vein
Sample 2211 Occurrence
Shonia #1
Shonia #6
Shonia Lake Narrows
Showing #8 (McVicar Lake #11)
Sor Lake Sill
Sor Lake Sill Shear (McVicar Lake #10)
South Shonia

### CARD LAKE–WETTLAUFER LAKE AREA

Card Lake Occurrence
Wettlaufer Lake Prospect

## Summary of Occurrence Areas: Birch–Uchi Greenstone Belt

### ZIONZ LAKE AREA

Fort Reliance

### FAWTHROP LAKE–SENIOR LAKE AREA

Fawthrop (Ferdinand) Lake Occurrence
Fawthrop (Ferdinand) Lake #2 Occurrence
Senior Lake Occurrence

## Summary of Occurrence Areas: Meen–Dempster Greenstone Belt

### BAMAJI LAKE–FRY LAKE AREA

BAD-02
Carpenter Zone
Corner
Fly
FTM Zone
Group 42
Hydroline
J. Loon Zone
L1 Zone
L15 Zone (Wesleyan Lake #5)
Path Zone
Sample 23055
Sample 23066
Sample 23111
Sanderson Zone
Tivy
Trail Zone
Cochenour Willans–Selco
Firth, N.
Flicka
Fry Lake #1
Fry Lake #4
Fry Lake #5
Fry Lake #6
Fry Lake #9
Fry Lake #10
Island–North Bamaji Lake
Kawashe Lake #2
Kawashe Lake #3
Kirkland Townsite Showing #1
Kirkland Townsite Showing #2
Knappett, R.
Loon
McVean Lake
Selco–Drum Lake
Selco–Fry Lake

## MEEN LAKE–DEMPSTER LAKE AREA

Anomaly A (Duffell Lake #4)
Anomaly B
Anomaly T
Bazinet (Duffell Lake #3)
Bazinet #8 (Duffell Lake #2)
Duffell Lake #6
Golden Patricia Mine
Wright Lake #8
Beardrum Lake
Ben Lake Property, Zone #1
Ben Lake Property, Zone #2
Ben Lake Property, Zone #3
Ben Lake Property, Zone #7
B-Zone
Caley Lake #6
Caley Lake #7
Caley Lake #8
Caley Lake #9
Caley Lake #10
Caley Lake #11
Carpenter Lake
Cooper Zones
Dempster Southwest
Dobie Lake #1
Dobie Zone
Drum Lake #2
Duffell Lake #1
Esker Zone
Hasaga C
Jacknife Lake
Jacknife Lake North
Jorsco
Kasagaminnis Lake
Kawashe Lake #4
Kawashe Lake #5
Kawashe Lake #6
Kawashe Lake #7
Kawashe Lake #8
Kawashe Lake #9
Kawashe Lake #10
Kawashe Lake #11
Kawashe Lake #12
Kawashe Lake #13
Kawashe Lake #14
Kawashe Lake #15
Kawashe Lake #16
Kawashe Lake #17
Kawashe Lake #18
Kawashe Lake #19
Kawashe Lake #20
Kawashe Lake #21
Kawashe Lake #24
Kawashe Lake #25
Kawinogans Lake
Koromond #1
Koval–Ohman
Little Ochig Lake #1
Little Ochig Lake #2
Little Ochig Lake #3
Little Ochig Lake #4
Little Ochig Lake #5
Little Ochig Lake #7
Little Ochig Lake #8
Little Ochig Lake #9
Matapesatakun Bay #1
Matapesatakun Bay #2
Matapesatakun Bay #3
Matapesatakun Bay #5
Matapesatakun Bay #6
Meen Lake #2
Meen Lake #4
Meen Lake #5
Meen Lake #6
Meen Lake #7
Meen Lake #8
Meen Lake #9
Meen Lake #10
Meen Lake #11
Meen Lake #12
Meen Lake #13
Meen Lake #14
Meen Lake #15
Meen Lake #16
Meen Lake #17
Meen Lake #18
Meen Lake #19
Meen Lake #20
Mousetrap Lake
Muskegsagagen Lake West
North Dempster Lake
Perkins Pond
Powerline Zone
South Dunlop Lake
Spike Zone
Sudbury Point
Tonsil Lake
Umex–Dorothy Lake
Wright Lake #4

## Summary of Occurrence Areas: Lake St. Joseph Greenstone Belt

### WESTERN LAKE ST. JOSEPH AREA

Capital Lithium Mines 34 Claim Group (Root Lake Pegmatite Group)
Capital Lithium Mines 5 Claim Group (Root Lake Pegmatite Group)
Consolidated Morrison (Root Lake Pegmatite Group)
Eagle (84) Island
Fish (164) Island
Island 17
Island 34
Lake St. Joseph
McCombe (Root Lake Pegmatite Group)
Wolf (175) Island
Island 81
Kitty Creek
Mile Five

### SOULES BAY–PASHKOKOGAN LAKE AREA

Belcher–Doran
East Lake St. Joseph Pegmatite
East Pashkokogan Lake
Lake St. Joseph North Zone Deposit
Lake St. Joseph South Zone Deposit
Pashkokogan River

## Summary of Occurrence Areas: Pickle Lake Greenstone Belt

### SAM'S LAKE AREA

JKP89-05
JKP89-09
Transterre

### KAPKICHI LAKE AREA

Gunnar Berg
Kapkichi Central Patricia
Thierry Mine
Umex K1-1
Umex G (Kapkichi Lake B)
Umex J&I (Umex Kapkichi)
Wimbabika Lake (WL88-05) Occurrence

## TARP LAKE AREA

7 Zone
77-2 Occurrence
Abyss Zone
Best Occurrence
Best One Zone
Carbonate Zone
CB-10 (77-1) Occurrence
CH-1 Trench Occurrence
Esso Zone
Jessie Vein
Jigger Occurrence
L22E Occurrence
Mariposite Zone
Metcalfe East Occurrence
Metcalfe Zone
Mitchell Zone
PP91-01 Occurrence
Pic–Pat Syndicate Occurrence
Puffin (line 40) Occurrence
Savoy Occurrence
Spring Zone
Tarp Lake East Zone and West Zone
TL-4 Zone
TL-7 Zone
TL-26 Occurrence
Triple X Occurrence
West Vein Occurrence

## CENTRAL PATRICIA AREA

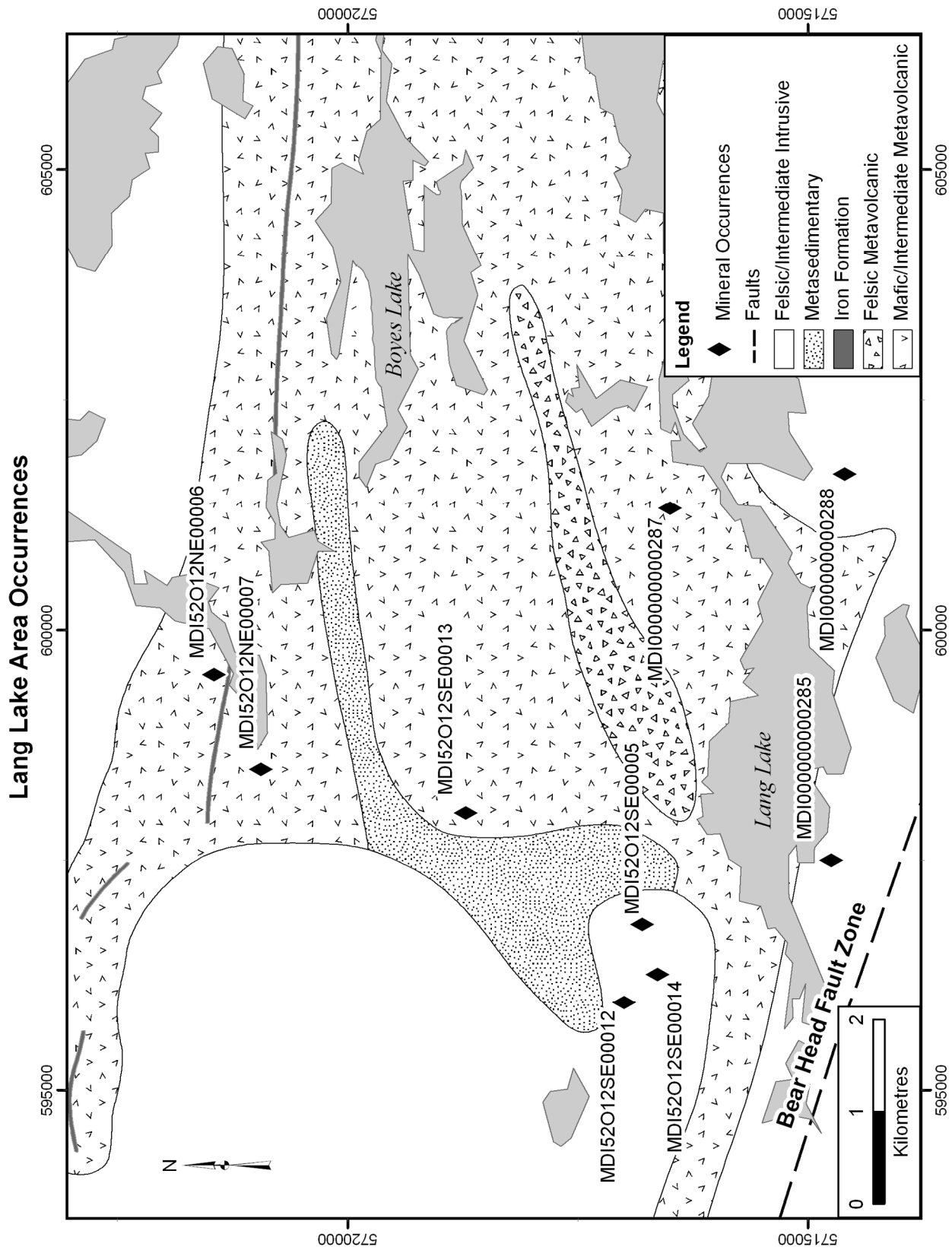
Central Patricia No. 1 Mine
CP-8
CP-12
CP-40
CP-63 Zone
CP-97
Dona Patricia
Gateway Patricia
Gateway Patricia G-26
Walker Patricia

## DONA LAKE AREA

Dona Lake Mine
Dona Lake 5
Dona Lake 23
Dona Lake 24
Dona Lake 25
Dona Lake 26
Eye Lake (Dona Lake 11)
Eye Lake North
Masakayash
Wright, D.
Firth (Dona Lake 1)
Seahorse Lake

## PICKLE CROW AREA

ABC Zone
Albany Porphyry Zone
Big Dome Vein
Central Patricia No. 2 Mine/Springer Shaft/No. 6 Zone
Central Patricia Northeast Claims
Cohen–MacArthur
CP-42 Zone
Crowshore Patricia
Crowshore Patricia A-2
D-Zone East and Sigmoid Vein Zone
Field Zone
G-P-81-6
Hook Vein
Kaw Crow Patricia KC-26
Lakeshore Vein
Marietta Zone I
Marietta Zone II
No. 3 Shaft Vein
Northeast Powderhouse Zone
Pickle Crow Mine
Pickwick
Riopelle Vein
Road Zone (CP-37)
Southwest Iron Formation Zone
Southwest Powderhouse Zone
Strickland Veins
Winoga Prospect (Tarp Lake 6a)
Winoga W-5 (Tarp Lake 6c)
Winoga W-18 (Tarp Lake 6b)




NTS 52 O: Lang Lake area occurrences

# LANG LAKE AREA OCCURRENCES

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1960*: Diamond drilling by Castlebar Silver & Cobalt Mines in the area between Lang Lake and Saddle Lake. *1968–1972*: Bochawna Copper Mines Ltd. and the Hanna Mining Company conducted an extensive exploration program in the area north of Lang Lake, including a diamond-drilling program that outlined a copper deposit. *1969–1971*: The Algoma Steel Corporation Ltd. conducted extensive diamond drilling and geophysics in northwest of Lang Lake for iron ore. *1969–1970*: Card Lake Copper Mines Limited conducted grid mapping geophysics and diamond drilling for gold and base metals in the Saddle Lake, Boyes Lake, Card–Cannon lakes, and Heinz Lake areas. *1970*: Mextor Mineral Ltd. and Kennco Exploration Limited conducted geophysics and diamond drilling for base metals in the Saddle Lake area. *1984–1986*: Duration Mines conducted geophysics, grid mapping and diamond drilling on the southern arm of the Lang Lake greenstone belt for base metals mineralization. *1985–1986*: Geological, geochemical and geophysical surveys in the western Lang Lake area by Utah Mines. *1991–1992*: Noranda Exploration Company Limited conducted grid mapping, geophysics and diamond drilling for base metals in the Lang Lake and Saddle Lake areas. *2003–2007*: East West Resource Corporation conducted geological and geophysical surveys and diamond drilling of the Lang Lake copper deposit.

## General Geology

Stott and Corfu (1991) described the Lang Lake greenstone belt as dominated by tholeiitic basalt flows and calc-alkalic pyroclastic deposits, with the eastern portion of the belt containing a significant clastic metasedimentary sequence that also includes iron formation horizons. The supracrustal rocks of this belt were provisionally assigned to the Confederation assemblage by Stott and Corfu (1991) based on a single age determination from a dacitic tuff in the lowermost (i.e., interpreted to be oldest) portion of the supracrustal rock sequence. The entire belt was isoclinally folded into an east-trending and east-plunging syncline (BHP–Utah Mines 1988). BHP–Utah Mines (1988) also indicated that the belt contains 2 significant intrusions, including an east-trending mafic stock in the Sor–McVicar lakes area, and a later north-trending felsic intrusion in the Shonia–McVicar lakes area. A number of base metal occurrences have been documented in the western portion of the belt, with a notable porphyry-type copper deposit (Lang Lake prospect) found within an approximately east-trending sliver of supracrustal rock mapped by Fenwick (1970) that extends westward into the adjacent granitic intrusions. Volcanogenic massive sulphide (VMS)-type zinc-copper mineralization has also been noted at a number of locations near the northwestern end of the greenstone belt, in close proximity to Saddle Lake. Mineralization types noted in the southwestern portion of the belt adjacent to Lang Lake include gold-bearing and silver-lead–bearing veins.

## Structural Geology

The dominant structural feature in the area is the Bear Head fault zone, which is located immediately to the southwest. This is an approximately southeast-striking, regional-scale, dextral shear zone classified by Stott and Corfu (1991) as a transcrustal megafault. This fault zone extends approximately 515 km from Lake Winnipeg to the northern boundary of the Meen–Dempster greenstone belt (Osmani and Stott 1988). Weidner (1987) also mapped an approximately northwest-striking (320) fault through the central portion of Lang Lake. It is possible that this structure is related to the Bear Head fault zone. Fenwick (1970) also mapped a number of approximately east-northeast- to east-striking lineaments in the western portions of the greenstone belt. These structures approximately parallel the regional foliation trends and the regional syncline axis, and may represent axial planar shear zones.

## Deposit Geology

The geology of each of the individual deposits is described below.

## AOI3 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 597500E 5714750N [occurrence 7 on Map 1 (*see* back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000285 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is found within a quartz vein hosted within intermediate tuff (Weidner 1987). The rock in the immediate area of the occurrence is dominated by intercalated mafic to intermediate metavolcanic flows and tuffs. These metavolcanic rocks were intruded by a relatively narrow (<3 m wide) anorthosite.

Foliation in the area of this occurrence is oriented approximately 110/90 (Weidner 1987). The metavolcanic rock–anorthosite contact is also oriented 110/90. The metavolcanic rock is moderately carbonate altered, with intense fuchsite alteration and moderate quartz veining occurring in proximity to the anorthosite contact. An anomalous gold assay of 0.038 ounce per ton gold was reported by Weidner (1987) from a grab sample of quartz vein material. Significant sulphide mineralization does not occur in the veins, with pyrite only observed rarely.

## CASTLEBAR #3 (STOUGHTON LAKE #1) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 598014E 5718717N [occurrence 3 on Map 1 (*see* back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O12SE00013 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on the reported intersection of anomalous concentrations of copper and zinc in Castlebar Silver and Cobalt Mines–Sulmac Exploration Services' 1960 diamond-drill hole No. 3 (AFRI# 52O12SE0024). The diamond-drill hole log indicates that the stratigraphy at this location is dominated by metavolcanic rock logged as andesite. Significant sections were also logged as banded siliceous tuff and rhyolite. Sulphide mineralization was reported throughout the approximately 100 m drill section, with 2 significant sections of massive sulphide. The widest of these massive sulphide intersections was encountered approximately 55 m from the top of the hole and was 2.2 m wide. Sulphide minerals that were logged included pyrrhotite, pyrite and chalcopyrite.

Fenwick (1970) mapped clastic metasedimentary (siltstone/argillite), iron formation and mafic metavolcanic rock units in the area of this occurrence. Fenwick (1970) indicated a sedimentary bedding orientation of approximately 060/80, as well as a nearby occurrence of mineralized float containing pyrite, chalcopyrite and bornite.

Numerous anomalous zinc and copper assays were reported from the upper 55 m of the drill hole, with the most significant being 2.18% Zn over 0.7 m and 0.26% Cu over 0.36 m.

## LANG LAKE PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 15, 595950E 5717000N [occurrence 4 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Cu, Mo, Ag, Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O12SE00012 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Lang Lake copper prospect is located at the west end of the Lang Lake greenstone belt. Findlay and Ayres (1977) indicated this deposit is located in a steeply dipping north-facing metavolcanic–metasedimentary sequence that was intruded by equigranular granodiorite stocks and felsic to intermediate dikes that are commonly porphyritic. Findlay and Ayres (1977) classified this deposit as an example of Archean porphyry-type mineralization.

Several phases of porphyry were described by Findlay and Ayres (1977). These include hornblende, quartz-plagioclase and mafic varieties. The oldest of these porphyry phases has been interpreted to be hornblende porphyry that occurs in an approximately concordant southeast-striking zone up to 110 m wide. The quartz-feldspar porphyry has been interpreted to be younger than the hornblende porphyry and occurs as 2 separate units located immediately to the north and south. Findlay and Ayres (1977, Figure 3.2) indicated that the northern quartz-feldspar porphyry unit parallels the hornblende porphyry and has a similar width. However, the southern quartz-feldspar porphyry unit pinches out to the northwest, but becomes substantially thicker than the northern unit toward the southeast. Findlay and Ayres (1977) also described intrusive breccia dikes (up to 6 m wide) that crosscut both porphyry types. The youngest porphyry phases are described as relatively narrow (up to 10 m) mafic dikes that approximately parallel the quartz-plagioclase dikes.

The adjacent granodiorite intrusions have been interpreted to predate the porphyry intrusions and were described by Findlay and Ayres (1977) as being equigranular and medium to coarse grained.

The sulphide-mineralized zone is approximately 700 m long (trending east) and 300 m wide (Findlay and Ayres 1977). Mineralization consists of pyrite, pyrrhotite, chalcopyrite and molybdenite as disseminations of stringers and veins in shear zones and fractures. Silver and gold were also reported to be present in trace quantities (Findlay and Ayres 1977). Mineralization occurs within the northern portions of the porphyry intrusions and north of the intrusive contact in the adjacent metasedimentary and metavolcanic rocks. The highest grade mineralization was reported by Findlay and Ayres (1977) to occur within pyroclastic rock, autoclastic breccia and metasedimentary rock located immediately north of the porphyry contact. Alteration is reported to be widespread in the vicinity of the deposit and consists of epidote, quartz, chlorite, carbonate, sericite, albite, sphene and clay minerals. The most notable alteration reported by Findlay and Ayres (1977) is a zone of epidote-quartz alteration within the quartz-plagioclase porphyry.

Findlay and Ayres (1977) reported that the average copper grade in the western half of the deposit ranges from 0.25% to 0.35% Cu, and the average molybdenum grade is approximately 0.005% Mo. Copper grades of over 1% occur locally in zones that are typically less than 5 m wide. Heggie (2006) reported that, in 1971, Hanna Mining and Bochawna Copper Mines calculated reserves of 23 million tonnes grading 0.29% Cu to a depth of approximately 150 m. A report by Noranda Exploration Co. Ltd. (1991) also indicated that the limits of the deposit remain open to the east and northwest. Diamond-drilling results reported by East West Resource Corporation (news release, May 18, 2006) indicated significant gold and silver assays from sections containing the highest copper values (8.99% Cu, 2.08 g/t Au and 61 g/t Ag over 0.3 m in DDH LL06-02).

## SADDLE CREEK OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 598484E 5720942N [occurrence 2 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (NE) |
| *MNDM Township Area:* | Baggy Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O12NE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Noranda Exploration Co. Ltd. (1992) indicated that the Saddle Lake–Saddle Creek area is largely underlain by pillowed mafic metavolcanic rock. These mafic flows are intercalated with felsic metavolcanic rock (quartz crystal tuff and rhyolite) and chert exhalite horizons. A relatively wide felsic metavolcanic sequence (300 to 400 m wide) consisting of strongly chloritized blue quartz-eye porphyritic rhyolite and coarse-grained volcanic fragmental rocks is exposed along the northwest shore of Saddle Lake. This sequence extends for a minimum of 1 km to the west-northwest, and is also interpreted to extend to the southeast below the surface of Saddle Lake (Noranda Exploration 1992). Alteration mineral assemblages observed included chlorite-garnet-actinolite, silicification and local sericitization (Noranda Exploration 1992).

The Saddle Creek occurrence is exposed at surface in a small pit, and was interpreted by to be located on the flank of the felsic metavolcanic sequence (Noranda Exploration 1992). Mineralization was described as consisting of banded semi-massive to stringer pyrrhotite-pyrite with trace chalcopyrite; alteration reportedly consists of intense chlorite-garnet alteration and localized silicification and sericitization (Noranda Exploration 1992). Preliminary whole-rock analysis of samples collected from the mineralized zone and adjacent felsic metavolcanic rock were reported to be indicative of sodium depletion, which is considered to be a favourable indication for VMS mineralization (Noranda Exploration 1992).

It was reported that assays for samples collected from this occurrence produced anomalous copper and zinc values; however, these results were not provided (Noranda Exploration 1992). Mextor Minerals and Kennco Exploration (AFRI# 52O12NE0002) reported assay values of up to 0.09% Cu, 0.02% Ni and 0.01% Zn over 1.3 m in DDH K-4 during a 1970 diamond-drilling program at this location.

## SADDLE LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 599520E 5721450N [occurrence 1 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (NE) |
| *MNDM Township Area:* | Baggy Lake Area |
| *Commodities:* | Zn, Cu, Pb, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O12NE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Noranda Exploration Co. Ltd. (1992) indicated that the Saddle Lake area is largely underlain by pillowed mafic metavolcanic rock. These mafic flows are intercalated with felsic metavolcanic rock (quartz crystal tuff and rhyolite) and chert exhalite horizons. A relatively wide felsic metavolcanic sequence (300 to 400 m wide) consisting of strongly chloritized blue quartz-eye porphyritic rhyolite and coarse-grained volcanic fragmental rocks is exposed along the northwest shore of Saddle Lake. This sequence extends

for a minimum of 1 km to the west-northwest, and is also interpreted to extend to the southeast below the surface of Saddle Lake (Noranda Exploration 1992). Alteration mineral assemblages observed included chlorite-garnet-actinolite, silicification and local sericitization (Noranda Exploration 1992).

The Saddle Lake occurrence is exposed at surface in 3 trenches that cover a strike length of approximately 100 m (Noranda Exploration 1992). The mineralized zone is indicated to be approximately 7 to 10 m wide, and strikes approximately southeast. The mineralization is reported to be hosted in a strongly chloritized, locally silicified and sericitized volcanic fragmental unit (i.e., part of the felsic metavolcanic sequence described above) that is interbedded with pillowed basalt and thin felsic tuff horizons. Mineralization was described as consisting of disseminated to stringer pyrite-pyrrhotite with local concentrations of stringer sphalerite, galena and minor chalcopyrite (Noranda Exploration 1992). Preliminary whole-rock geochemical analysis of samples collected from the mineralized zone was reported to be indicative of sodium depletion, which is considered to be a favourable indication for VMS mineralization (Noranda Exploration 1992).

Noranda Exploration Co. Ltd. (1992) reported grab sample assays from the surface showing of up to 0.08% Cu, 3.55% Pb, 4.29% Zn and 3.68 ounces per ton silver, and chip sample assays of 0.01% Cu, 0.219% Pb, 1.55% Zn and 0.21 ounce per ton silver over 4.0 m. Two diamond-drill holes were undertaken in the vicinity of the occurrence by Noranda in 1992 to test a crosscutting geophysical anomaly (Noranda Exploration 1992). Although assay values reported from these drill holes were low, whole-rock geochemical analyses exhibited alteration patterns (i.e., sodium enrichment, calcium and magnesium depletion) consistent with a VMS-type hydrothermal system.

## SAMPLE 0134 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 601700E 5714600N<br>[occurrence 8 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000288 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Weidner (1987) reported an anomalous gold assay of 0.047 ounce per ton gold from a small, isolated quartz vein located in a felsic intrusion near the southern boundary of the greenstone belt. The occurrence is located immediately east of the contact between intermediate metavolcanic rock and granodiorite and a north-northeast-trending lineament mapped by Weidner (1987).

## SAMPLE 2056 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 601325E 5716500N<br>[occurrence 9 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000287 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on the reported presence of anomalous gold mineralization (grab sample assay of 0.043 ounce per ton gold) (Weidner 1987) within mafic metavolcanic rock in close proximity to an east-northeast-trending lineament. Foliation in the vicinity of the lineament was mapped by Weidner (1987) as striking approximately parallel to the lineament with steep dips toward the north. Silicification was noted by Weidner (1987) in the vicinity of the east-northeast-trending lineaments. However, no significant sulphide mineralization was reported to be associated with this alteration.

## STOUGHTON LAKE #2

| | |
|---|---|
| *Location:* | UTM Zone 15, 596258E 5716634N [occurrence 5 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Cu, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O12SE00014 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based upon the reported occurrence of anomalous copper and gold assays in a diamond-drill hole (DDH No. 1) drilled at this location in 1960 by Castlebar Silver and Cobalt Mines–Sulmac Exploration Services (AFRI# 52O12SE0027). Mineralization is reported to occur in medium-grained diorite cut by a 3 mm wide quartz stringer containing pyrite, and possible chalcopyrite. The diamond-drill hole log also indicates that the drill hole was undertaken to test a surface quartz vein that was mineralized with molybdenite.

## STOUGHTON LAKE #4 (AOI1) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 596800E 5716800 N [occurrence 6 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O12SE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This gold occurrence is located within a magnetite iron formation unit hosted within intermediate metavolcanic flows (Weidner 1987). Foliation varies, with strike ranging from 020 to 050 and dip ranging from 70° toward the east to vertical. Mineralization at this location consists of 5% disseminated pyrite and 3% pyrrhotite, with these minerals likely to be replacing the primary magnetite. The most favourable reported assay was a value of 0.038 ounce per ton gold obtained from a surface grab sample (Weidner 1987).

# McVICAR LAKE AREA OCCURRENCES

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1950*: Chellow Gold Mines Ltd. conducted geological mapping, trenching and diamond drilling in the lower McVicar Lake area. *1959–1961*: Kenlew Mines Ltd. conducted geological mapping, stripping, trenching and diamond drilling in the lower McVicar Lake area and the area to the east of McVicar Lake. *1968–1969*: New Jersey Zinc Exploration Company (Canada) Limited conducted geological mapping, geophysics, trenching and limited diamond drilling for VMS mineralization in the area north of north of McVicar Lake. *1971*: The Hoey Syndicate conducted geological mapping, trenching and geophysics for copper-nickel-PGE mineralization in the lower half of the McVicar Lake area. *1977–1981, 1987, 1991*: Cominco Ltd. conducted extensive airborne geophysical surveys as well as diamond drilling over the McVicar Lake and Andy Lake areas, well as limited diamond drilling in the McVicar Lake and Cannon Lake areas for gold and base metals. *1985–1994*: Utah Mines, later BHP–Utah Mines, and then BHP Minerals Canada (on its own) conducted extensive grid mapping, geophysics and diamond drilling on the area surrounding McVicar Lake resulting in the discovery of the Altered Zone and lower McVicar Lake structural zones and several associated gold showings. *2001–2003*: Prospector Consolidated Inc. and Continuum Resources Ltd., conducted extensive trenching and limited diamond drilling for gold on the old BHP–Utah Mines property in the McVicar Lake area.

## General Geology

Stott and Corfu (1991) described the Lang Lake greenstone belt as dominated by tholeiitic basalt flows and calc-alkalic pyroclastic deposits, with the eastern portion of the belt containing a significant clastic metasedimentary sequence that also includes iron formation horizons. The supracrustal rocks of this belt were provisionally assigned to the Confederation assemblage by Stott and Corfu (1991) based on a single age determination from a dacitic tuff in the lowermost (i.e., interpreted to be oldest) portion of the supracrustal rock sequence. The entire belt was isoclinally folded into an east-trending and east-plunging syncline (BHP–Utah Mines 1988). BHP–Utah Mines (1988) also indicated that the belt contains 2 significant intrusions, including an east-trending mafic stock in the Sor–McVicar lakes area, and a later north-trending felsic intrusion in the Shonia–McVicar lakes area. The mafic intrusion has a number of copper-nickel-PGE occurrences documented near its northern contact, whereas the felsic intrusion hosts several gold occurrences.

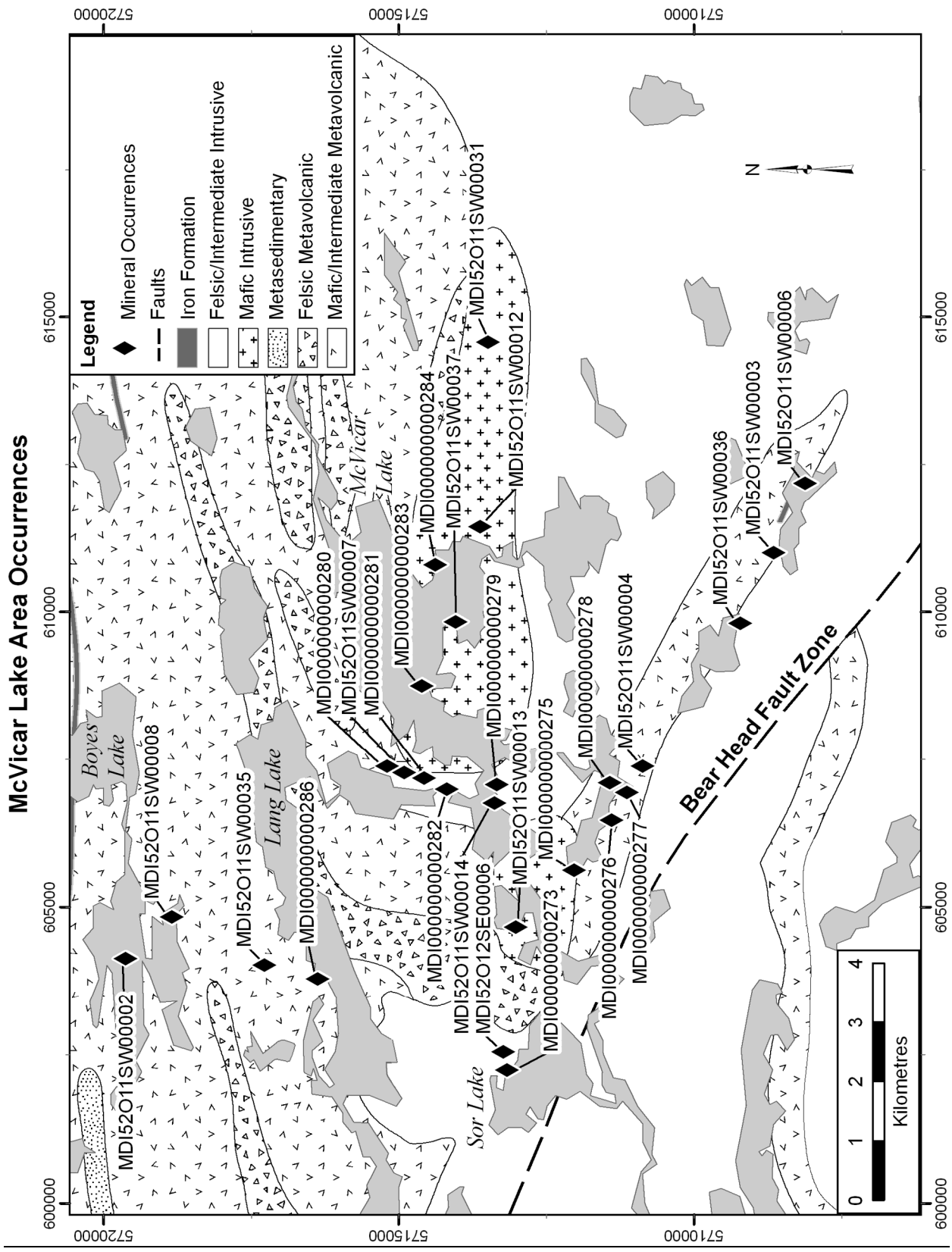
## Structural Geology

The dominant structural feature in the area is the Bear Head fault zone, which is located immediately to the southwest. This is an approximately southeast-striking, regional-scale, dextral shear zone classified by Stott and Corfu (1991) as a transcrustal megafault. This fault zone extends approximately 515 km from Lake Winnipeg to the northern boundary of the Meen–Dempster greenstone belt (Osmani and Stott 1988). Two additional west-northwest-trending deformation zones referred to as the Lower McVicar fault and Altered Zone fault (D.B. McKay 2004) are also present in the area and are associated with a number of gold occurrences. Fumerton (1997) suggests a relationship between the Altered Zone fault and the axial plane of the regional syncline.

Fumerton (1997) indicated that supracrustal rocks between the Bear Head and Lower McVicar faults have been folded into sigmoidal S-folds, and that a number of splay faults also exist in this area. The geometry of these structures has been interpreted as being consistent with a dextral sense of displacement.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 52 O: McVicar Lake area occurrences

## AGM ISLAND

| | |
|---|---|
| *Location:* | UTM Zone 15, 607108E 5711432N<br>[occurrence 20 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au, Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000278 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The AGM Island occurrence was interpreted to be the strike-extension of the AGM zone (BHP Minerals Canada 1993a). The AGM zone is a shear zone characterized by apple green mica alteration and quartz veining, and is located approximately 1.5 km to the west-northwest of the AGM Island occurrence. Mapping indicated that the AGM Island zone is oriented approximately 300/80, and is hosted within gabbro (BHP Minerals Canada 1993a). A grab sample from this location was reported to have assayed 1100 ppb Au and 8500 ppm Cu (BHP Minerals Canada 1993a).

## AGM ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 605625E 5712030N<br>[occurrence 17 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000275 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The AGM or apple green mica zone was described as a zone of sheared anorthositic gabbro with abundant apple green mica alteration and quartz veining (BHP Minerals Canada 1993a). The surface exposures of the AGM zone (covering a strike length >33 m) consist of several AGM alteration zones up to 2.5 m wide and sheared, contorted quartz veins that are up to 1.3 m in width. The presence of carbonate breccia and traces of pyrite mineralization in this zone was also indicated (BHP Minerals Canada 1993b). Mapping indicated that the mineralized shear zone is oriented approximately 100/80 (BHP Minerals Canada 1993a). The most notable assay, reported by BHP Minerals Canada (1993a), from this zone was 8.9 g/t Au from a grab sample collected from a 10 cm wide quartz vein in the westernmost stripped area. A follow-up diamond-drilling program (BHP Minerals Canada 1993b) encountered the mineralized zone in 2 drill holes, but did not return any significant gold assays.

## ALTERED ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 611441E 5713623N<br>[occurrence 34 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00012 |
| *Subprovince/Belt/Assemblage:* | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Altered Zone prospect is located on the Altered Zone fault, which was described by BHP–Utah Mines (1988) as a northwest-trending ductile shear zone that is refracted north-northwest at a contact between mafic metavolcanic rock and gabbro. To the southeast of the Altered Zone prospect, the fault strikes approximately 300 through the gabbro intrusion and dips steeply to the northeast. To the north of the gabbro–mafic metavolcanic rock contact, the fault strikes approximately 330. Gold mineralization at the Altered Zone prospect occurs within a dilation zone in the fault structure that developed within this flexure. The deformation zone associated with the fault was reported to have a width of approximately 5 to 6 m to the northwest and southeast of the Altered Zone (BHP–Utah Mines 1988). Within the Altered Zone, the area of deformation is reported to dilate to a width of approximately 20 m over a strike length of 300 m.

D.B. McKay (2004) reported that the Altered Zone is exposed on surface over a total strike length of 150 m. Foliation in this portion of the shear zone varies in strike from 294 to 310° and dips from 36 to 51° to the northwest. Gold mineralization largely occurs in lens-shaped quartz ± iron carbonate veins. These veins are indicated by D.B. McKay (2004) to be mineralized with minor pyrite and rare chalcopyrite. D.B. McKay reported that channel sampling carried out in 2003 provided assay results of up to 12.77 g/t Au over 0.8 m. A summary of the results of earlier surface sampling is provided by Janes, Seim and Storey (1991).

Based on the results of an earlier diamond-drilling program, BHP–Utah Mines (1988) described the geology of the Altered Zone as consisting of sheared and/or brecciated basalt and gabbro, quartz-carbonate-sericite schist and apple green mica schist. The deformation zone also hosts significant quartz veining and pods of intermediate intrusive rock. BHP–Utah Mines (1988) indicated that pyrite mineralization occurs throughout the zone (generally 2 to 5%), and that visible gold also occurs in quartz veins. Gold mineralization also occurs in the altered wall rocks in association with pyrite, with grades generally proportional to the pyrite content. BHP–Utah Mines (1988) indicated that the gold mineralized dilation zone likely plunges 30 to 45° to the east-southeast. D.B. McKay (2004) also interpreted surface foliation trends and mineral elongation lineations as being indicative of shallow (15 to 31°) eastward to east-southeastward-plunging mineralized veins and ore shoots.

In general, BHP–Utah Mines (1988) described gold mineralization in the Altered Zone as consisting of widespread low-grade gold values interspersed with discrete high-grade sections. The most significant assay reported (BHP–Utah Mines 1988) from this zone was 14 g/t Au in a 4.63 m interval of massive quartz from DDH ML-27. Other significant drill intersections were tabulated by D.B. McKay (2004).

## APPLE ISLAND ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 608753E 5714610N<br>[occurrence 31 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000283 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Apple Island occurrence is located within the zone of deformation of the Altered Zone fault. The Altered Zone fault was described by Allen (1986) as a generally east-southeast-striking, relatively shallow dipping (<50° to the northeast) structure characterized by intense alteration and brittle-ductile deformation. Alteration minerals in this deformation zone include sericite, carbonate, chlorite and silica (including quartz veins and silica flooding). In addition, BHP–Utah Mines (1991b) indicated the presence of apple green mica in sheared mafic material. Allen (1986) also indicated that a hydrothermal carbonate breccia commonly envelops the deformation zone.

The surface expression of the Altered Zone fault in the Apple Island area was reported to be located at the contact between basalt to the north and gabbro to the south (BHP–Utah Mines 1991b). The deformation zone on Apple Island is reported to be characterized by intense shearing, alteration and brecciation, with apple green mica and quartz veining. The areas at the margin of the deformation zone in both lithologies were reported to show little evidence of alteration, but are crosscut by carbonate-filled fractures that are up to 10 cm wide (BHP–Utah Mines 1991b).

Channel sampling of a single outcrop of intensely sheared and altered gabbro on Apple Island was reported to have produced assay values of up to 785 ppb Au over 1 m (BHP–Utah Mines 1991b). A grab sample assay of 725 ppb Au was also reported from a sample of sheared and brecciated gabbro collected nearby on the south shore of McVicar Lake (BHP–Utah Mines 1991b).

## BOYES LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 604127E 5719633N<br>[occurrence 10 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Fe |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Algoma-Type Iron Formation |
| *MDI Reference Number:* | MDI52O11SW00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This is a discretionary occurrence based on the reported intersection of approximately 21 m of banded iron formation in Card Lake Copper Mines diamond-drill hole BL-1 (AFRI# 52O11SW0040).

## BOYES LAKE SOUTH

| | |
|---|---|
| *Location:* | UTM Zone 15, 604836E 5718844N [occurrence 11 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number:* | MDI52O11SW00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on the reported presence of anomalous concentrations of copper in Card Lake Copper Mines diamond-drill hole BL-3 (AFRI# 52O11SW0040). Mineralization was reported on the drill-hole log to occur in a sequence logged as quartz-chlorite schist. Other lithologies noted on the drill-hole log include quartz gabbro and quartz diorite. Fenwick (1970) mapped the rocks of the area as consisting largely of mafic metavolcanic rock (largely massive and pillowed flows), with some intercalated units of felsic to intermediate tuff and iron formation.

Mineralization at this location is reported on the diamond-drill hole log to consist of widely disseminated (with local sulphide concentrations of up to 25%) pyrite, pyrrhotite and chalcopyrite. Sulphides are occasionally described as occurring as massive stringers and blebs, and are also reported to occur in association with quartz veins.

The most notable assays reported from this borehole were 0.17% Cu, 0.01% Ni, 0.05 ounce per ton silver and 0.005 ounce per ton gold from drill sections ranging from 0.45 to 0.6 m.

## CHELLOW VEIN / CLIFF ZONE (McVICAR LAKE #7)

| | |
|---|---|
| *Location:* | UTM Zone 15, 607390E 5710869N [occurrence 21 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

D.B. McKay (2004) described the Chellow vein as a single narrow, boudinaged quartz vein that ranges from less than 1 cm to 50 cm wide. BHP Minerals Canada (1993a) indicated that the vein is oriented 290/80 and consists of smoky grey to white quartz mineralized with minor pyrite and visible gold. The vein is reported to be hosted within a massive unit of gabbro or mafic metavolcanic rock and is exposed for a strike length of approximately 125 m. A series of 34 channel samples collected across the vein at intervals of 2 m are reported to have averaged 28.8 g/t Au. A grab sample assay of 827 g/t Au was reported by D.B. McKay (2004). A five-hole diamond-drilling program returned much lower gold values, with the best reported intersection as 1160 ppb Au over 0.3 m (BHP Minerals Canada 1993b).

A second gold mineralized vein referred to as the “Cliff Zone” (BHP Minerals Canada 1993a) is located approximately 50 m south of the Chellow vein. This may be the same vein referred to by Janes, Seim and Storey (1989) as “Occurrence No. 8”. This vein was reported to be approximately 5 cm wide, and is oriented 300/80 (BHP Minerals Canada 1993a). Shearing observed by Janes, Seim and Storey (1989) in mafic metavolcanic rock in close proximity to the occurrence was reported to have an orientation of 305/70. A secondary fracture cleavage oriented 140/90 was reported to approximately parallel the gold mineralized vein.

The most notable assay reported from the Cliff Zone vein by BHP Minerals Canada (1993a) was 70 g/t Au (grab sample), whereas Janes, Seim and Storey (1989) reported a 0.2 m chip sample assay of 1730 ppb Au. Two diamond-drill holes that targeted this structure did not return any significant assay results (BHP Minerals Canada 1993b).

## DOUGIE LAKE EAST

| | |
|---|---|
| *Location:* | UTM Zone 15, 612192E 5708122N [occurrence 24 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on the reported discovery of gold (4 ounces per ton gold) in mineralized float on the south shore of Dougie Lake by Pickle–Patricia Explorers and Kenlew Mines (Leonard 1986). Visible gold was also reported in a quartz vein encountered during drilling of Pickle–Patricia Explorers diamond-drill hole KL-1 (AFRI# 52O11SW0056), approximately 50 m southeast of the mineralized float. However, assays from this section of core did not return significant gold values. The drill-hole log indicates that the vein was mineralized with minor wispy sericite and tiny flakes of visible gold. The vein was logged as being located at the contact between brownish green tuff and carbonatized, chloritized mafic metavolcanic rock. The drill-hole location map indicates that foliation in the area is oriented approximately 285/80.

## DOUGIE LAKE WEST

| | |
|---|---|
| *Location:* | UTM Zone 15, 611004E 5708653N [occurrence 23 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Dougie Lake West occurrence was described by Leonard (1986) as a mineralized shear zone from which Pickle–Patricia Explorers and Kenlew Mines are reported to have obtained assay values of up to 2 ounces per ton gold in the early 1960s. The mineralized shear is reported to be an approximately 1.5 m wide zone in intermediate metavolcanic rock that strikes approximately 120°. The shear contains a massive to moderately laminated milky white quartz vein that contains minor disseminated pyrite. A 30 to 40 cm wide zone of massive pyrite was also reported to occur in contact with the vein (Leonard 1986). The log for Pickle–Patricia Explorers DDH KL-4 (AFRI# 52O11SW0069) indicates that gold mineralization at depth occurred in a smoky grey quartz vein mineralized with wispy greenish sericite, acicular arsenopyrite (up to 2%), pyrite (up to 3%) and pyrrhotite (trace). This vein was reported to occur within an approximately 1.5 m wide section of shear zone material mineralized with pale green sericite, arsenopyrite and pyrite. The sheared material occurs within material logged as mafic metavolcanic rock. The most favourable reported assay from DDH KL-4 was 0.11 ounce per ton gold.

## HOEY SYNDICATE (McVICAR LAKE #5)

| | |
|---|---|
| *Location:* | UTM Zone 15, 609836E 5714036N [occurrence 32 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Cu, Ni, PGE |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O11SW00037 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Hoey Syndicate copper-nickel occurrence is located within the approximately east-striking McVicar Lake gabbro intrusion, near the northern contact with mafic metavolcanic rock. Idziszek (1972) described the intrusion as a sill-like or banded lopolith body of gabbro, anorthosite, gabbroic anorthosite and diorite. In the vicinity of the occurrence, Idziszek (1972) indicated that the intrusion is a banded and foliated gabbro-anorthosite complex, with the banding and foliation striking approximately northwest. However, Janes, Seim and Storey (1991) indicated that the banding and layering are not indicative of a classic mafic to ultramafic complex. The dominant rock type was described by Idziszek (1972) as uniform, medium-grained, mildly foliated gabbro. However, some local variations in composition were noted. The portions of the gabbro containing the highest concentration of ferromagnesian minerals were indicated to contain magnetite-rich disseminations that have a distinctive magnetic signature. The intrusion was also reported to contain narrow bands (generally <6 m wide) of coarse-grained anorthositic gabbro. The coarse-grained segregations were reported by Idziszek (1972) to be non-foliated and contain disseminated to massive chalcopyrite and pyrrhotite mineralization. Janes, Seim and Storey (1991) indicated that disseminated mineralization is also found in the medium-grained gabbro in the main mineralized zone (Trench #1), with an average sulphide content of 1% (up to 7% locally).

Significant assays reported from this occurrence include 0.36% Cu and 0.26% Ni from a 1.5 m chip sample (Idziszek 1972), and a grab sample assay of 2768 ppm Cu, 1032 ppm Ni, 345 ppb Pd and 94 ppb Pt (Janes, Seim and Storey 1991).

## JAY ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 602240E 5713170N [occurrence 14 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000273 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The rocks in the vicinity of the Jay zone are dominated by deformed and altered tonalite of the Sor Lake sill. Felsic metavolcanic rock occurs immediately to the north; the tonalite is reported to have been intruded by a later mafic body that has partially assimilated tonalite xenoliths. The tonalite intrusion is crosscut by a narrow (20 to 50 cm wide) anastomosing shear zone. The shear is located within a few metres of the contact with the felsic metavolcanic rock and is reported to strike between 270 to 290 and dip steeply (74 to 82°) to the north. The rocks within 1.5 m of the shear zone are indicated to be fractured and brecciated (D.B. McKay 2004).

D.B. McKay (2004) reported that the shear zone contains several narrow, discontinuous, boudinaged quartz ± iron carbonate veins. The veins are mineralized with 1 to 2% pyrite and minor chalcopyrite. Notable assays reported by D.B. McKay (2004) include 24.99 g/t Au from a 0.50 m channel sample and 77.79 g/t Au from a grab sample. Diamond drilling of the Jay zone reported by Fumerton (1997) encountered highly sheared and altered rocks. However, no significant gold assays were obtained.

## LANG LAKE–BELORE

| | |
|---|---|
| *Location:* | UTM Zone 15, 604021E 5717282N<br>[occurrence 12 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Cu, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number:* | MDI52O11SW00035 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Janes, Seim and Storey (1991) indicated that this occurrence is located within a 3 to 5 m wide mineralized shear zone in mafic metavolcanic rock. The shear zone occurs at the contact between mafic metavolcanic rock and greywacke (BHP Minerals Canada 1992a). The mineralized shear zone was reported by Janes, Seim and Storey (1991) to have an orientation of 090/86. The metasediment–metavolcanic contact zone was reported to be silicified (BHP Minerals Canada 1992a), whereas the central portion is fissile chloritic schist that contains narrow lenses of grey to white quartz (Janes, Seim and Storey 1991). Mineralization was reported by Janes, Seim and Storey (1991) to consist of pyrite stringers parallel to foliation planes, with an average concentration of approximately 3%.

Sampling of this occurrence by Belore Mines is reported to have returned assays of up to 0.45% Cu, whereas a 1990 OGS sample is reported to have returned an assay of 14 126 ppb Au (Janes, Seim and Storey 1991). Subsequent surface sampling and diamond drilling by BHP Minerals Canada did not produce any significant assay results (BHP Minerals Canada 1993a).

## McVICAR LAKE #4

| | |
|---|---|
| *Location:* | UTM Zone 15, 609816E 5709214N<br>[occurrence 22 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number:* | MDI52O11SW0036 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on a reported anomalous zinc assay (8000 ppm Zn) reported from Cominco diamond-drill hole ML81-4 (AFRO# 52O11SW0016). The anomalous assay was obtained from material logged as tuffaceous chert and chert that contains 5% medium-grained pyrite as stringers and small lenses in bedding planes. Other lithologies reported in this drill hole included mafic metavolcanic rock and banded magnetite iron formation. Some pyrrhotite and pyrite mineralization (up to 3% reported for each) was noted in the iron formation horizons. No precious metal assays are reported on the diamond-drill log.

## McVICAR LAKE COPPER

| | |
|---|---|
| *Location:* | UTM Zone 15, 606944E 5711137N<br>[occurrence 19 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Vein |
| *MDI Reference Number:* | MDI000000000277 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on a significant copper assay of 5840 ppm Cu (BHP Minerals Canada 1993a) for a sample collected from a vein that likely corresponds to a chalcopyrite showing recorded by Fenwick (1971). This vein is hosted within rocks mapped as mafic metavolcanic rock.

## McVICAR LAKE EAST

| | |
|---|---|
| *Location:* | UTM Zone 15, 614578E 5713492N<br>[occurrence 35 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Cu, Ni, PGE |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O11SW00031 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The McVicar Lake East copper-nickel-PGE occurrence is located within the approximately east-striking McVicar Lake gabbro intrusion, near the northern contact with mafic metavolcanic rock. Allen (1986) indicated that mineralization at this location occurs within a medium- to coarse-grained phase of the McVicar Lake gabbro, which has been intensely silicified and appears to become more fine grained. The main showing is located at the highly fractured and sheared volcanic–intrusive contact (likely coincident with a fault) that strikes approximately northwest and dips steeply to the southeast (New Jersey Zinc Exploration Co. (Canada) Ltd. 1971). Based on the results of diamond drilling, New Jersey Zinc (1971) indicated that the intrusion consists of 2 phases described as diorite and gabbro. Each of these phases is reported to be mineralized with pyrite, chalcopyrite and pyrrhotite in fractures and narrow veinlets. A 1.5 m wide magnetite-rich band was reported to occur in the gabbro. The mafic metavolcanic rock was described as fine grained and chloritic, and commonly containing quartz-carbonate veining (New Jersey Zinc 1971). Volcanic xenoliths containing significant copper-nickel mineralization were also reported in the gabbro and/or diorite (New Jersey Zinc 1971).

According to Allen (1986), sulphide mineral concentrations in the area of the surface occurrence range from 20 to 90%. Pyrrhotite is the dominant mineral, with occasional chalcopyrite and pyrite. Pentlandite may also be present based on the high reported nickel assays (Allen 1986).

Significant assays reported from this occurrence include grab sample values of up to 30 400 ppm Cu, 9300 ppm Ni and 760 ppb PGE (Allen 1986) and diamond-drilling values of up to 0.96% Cu over 1 m and 0.26% Ni over 1.5 m (New Jersey Zinc 1971).

## NORTH FLEXURE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 610803E 5714385N<br>[occurrence 33 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000284 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The North Flexure zone is a gold mineralized portion of the Altered Zone fault that is located where this structure refracts parallel to the contact between mafic metavolcanic rock to the north and gabbro to the south, creating a zone of dilation favourable for the deposition of gold (BHP–Utah Mines 1991a). The metavolcanic rock is reported to be intercalated with narrow intervals of iron formation; the gabbro is often described as being anorthositic. To the east of the flexure, the fault zone strikes approximately west-northwest (i.e., D.B. McKay (2004) reported that foliations at the Altered Zone prospect range between 294–310/36–51), whereas to the west, the fault strikes approximately easterly (i.e., BHP–Utah Mines (1991a) reported an orientation of 280/40).

The deformation zone at the North Flexure was described as consisting of intensely foliated and altered equivalents of basalt and/or gabbro (BHP–Utah Mines 1991a). The sheared material is reported to be enveloped by a hydrobreccia zone of varying width. It was indicated (BHP–Utah Mines 1991a) that alteration at this location occurs in distinct propylitic, potassic and argillic zones. The outermost zone consists of propylitic alteration that includes fine light green silica veinlets, chloritic fracture coatings, minor disseminated pyrite and pervasive calcium carbonate alteration. Potassic alteration consisting of sericite, pyrite, carbonate, apple green mica and quartz typically occurs within 5 m of the fault. Argillic alteration is relatively minor and sporadic, occurring as kaolinitization of plagioclase in anorthositic gabbro.

BHP–Utah Mines (1991a) indicated that gold mineralization is associated with quartz veining and pyrite mineralization (i.e., near the centre of the deformation zone), with the highest assays obtained from locations with the highest sulphide concentration (up to 30%). Minor chalcopyrite and pyrrhotite mineralization has also been noted, but was interpreted to be related to primary sulphides present in the gabbro intrusion (BHP–Utah Mines 1991a). Gold and tetrahedrite grains have been observed in thin section and occur within or adjacent to pyrite grains. The mineralized zone was interpreted to consist of an approximately 500 by 25 m dilation zone in the Altered Zone fault that plunges to the northwest (BHP Minerals Canada 1992c). Although the zone remains open at depth, it was suggested that similarities with the nearby Altered Zone prospect suggest that the North Flexure zone may not extend more than 250 m down-plunge (BHP–Utah Mines 1991b).

Significant assays reported from this zone were tabulated by D.B. McKay (2004), with the most notable being 9.3 g/t Au over 2.02 m from drill hole ML-91-54.

## POINT SHOWING

| | |
|---|---|
| *Location:* | UTM Zone 15, 607077E 5713341N<br>[occurrence 26 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000279 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

BHP Minerals Canada (1993a) reported the presence of anomalous gold values at this location in altered, pyrite-mineralized tonalite. The style of mineralization is similar to that observed further to the north in the vicinity of Shonia Lake.

## QUARTZ-PYRITE VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 606471E 5711397N<br>[occurrence 18 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au, Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000276 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Quartz-Pyrite vein occurrence was described as a 40 cm wide quartz vein containing an average of 15% pyrite with minor chalcopyrite (BHP Minerals Canada 1993a). This is likely to be the same pyrite and chalcopyrite mineralized quartz vein illustrated at this location by Fenwick (1971). The vein is hosted within rock mapped as mafic metavolcanic and has an approximate orientation of 290/80 (BHP Minerals Canada 1993a). The most notable grab sample assays reported from this vein were 2.8 g/t Au and 6280 ppm Cu.

## SAMPLE 2211 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 603780E 5716380N<br>[occurrence 13 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Ag, Pb |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000286 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence was reported by Weidner (1987) to be located within an approximately 10 m wide shear zone hosted within a sequence of mafic to intermediate metavolcanic rocks. The shear zone orientation is approximately 320/90. The shear zone contains numerous narrow quartz veins (<5 cm) that are oriented parallel to the shear zone boundaries. These veins were reported by Weidner (1987) to be mineralized with up to 10% sulphides. Alteration within the shear zone is reported to consist of carbonatization,

silicification and chlorite. The shear zone is crosscut by a felsic dike that was reported by Weidner (1987) to exhibit extensive carbonate (possibly ankerite) alteration. The intrusive contact is reported to be oriented approximately 050/80. The felsic dike also was reported by Weidner (1987) to contain significant quartz veining, with 2 sets of narrow (<5 cm) stringers that strike approximately 045 and 320. Up to 2% disseminated pyrite is reported to occur within these quartz stringers.

A grab sample of quartz vein material from this location was reported by Weidner (1987) to have assayed 297 ppm Ag and >10 000 ppm Pb.

## SHONIA #1

| | |
|---|---|
| *Location:* | UTM Zone 15, 607277E 5714914N<br>[occurrence 29 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

D.B. McKay (2004) indicated that the Shonia #1 prospect is located where the Altered Zone fault intersects the Shonia Lake tonalite sill. The Altered Zone fault was described by Allen (1986) as a generally west-northwest-striking, relatively shallow dipping (<50° to the northeast) structure characterized by intense alteration and brittle–ductile deformation. Alteration minerals in this deformation zone include sericite, carbonate, chlorite and silica (including quartz veins and silica flooding). Allen (1986) also indicated that a hydrothermal carbonate breccia commonly envelops the deformation zone.

The geology of the surface exposure of the Shonia #1 zone was described by D.B. McKay (2004) as consisting of strongly fractured and variously altered coarse-grained tonalitic rocks intruded locally by narrow mafic and felsic dikes. Alteration minerals are reported to include iron carbonate, sericite, silica and pyrite. Many of the fractures are filled with quartz ± iron carbonate veins. These veins have varying orientations and are typically narrow (<70 cm wide), discontinuous and boudinaged. Some veins are barren, whereas others contain significant amounts of pyrite. D.B. McKay (2004) indicated that there is typically a strong positive correlation between the pyrite content of the veins and gold grades. The auriferous pyrite-mineralized veins are also reported to have similar orientations, averaging 035/40.

Channel sampling of these veins reported by D.B. McKay (2004) included an assay of 15 926 ppb Au from a 50 cm section across a 40 cm wide pyritic (5 to 7%) vein. Although the pyritiferous veins typically return the highest gold assays, D.B. McKay (2004) reported a grab sample assay of 26 221 ppb Au from a poorly mineralized 25 cm wide quartz vein that is oriented 120/45. A grab sample of wall rock containing massive sulphides was reported by Janes, Seim and Storey (1989) to have assayed 3750 ppb Au.

The results of a 1992 BHP Minerals Canada diamond-drilling program indicated the Shonia #1 gold mineralization occurs within an approximately 200 m quartz vein halo (BHP Minerals Canada 1992b). Information provided by D.B. McKay (2004) further indicated that the diamond drilling defined a smaller high-grade quartz vein envelope within the alteration halo (characterized by sericite, iron carbonate and chlorite alteration). The interpretation of the 1992 diamond-drilling results (BHP Minerals Canada 1992b) indicated the existence of one set of narrow auriferous quartz veins having average orientations of 068/76, and a second set of potentially auriferous veins having average orientations of 039/50. The second set appears to correspond with the auriferous veins mapped on surface by D.B. McKay (2004).

Significant gold assays from 9 drill holes advanced during the 1992 BHP Minerals Canada and 2003 Prospector Consolidated Resources diamond-drilling programs are tabulated by D.B. McKay (2004). Notable intersections include 24.5 g/t Au over 1.1 m in ML-92-66, 11.9 g/t Au over 1.22 m in ML-92-76 and 11.7 g/t Au over 1.50 m in ML-92-82.

## SHONIA #6

| | |
|---|---|
| *Location:* | UTM Zone 15, 607389E 5715197N<br>[occurrence 30 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000280 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

D.B. McKay (2004) indicated that the Shonia #6 gold mineralization occurs in narrow (2 to 20 cm) quartz ± iron carbonate veins hosted by sheared and altered tonalite. The mineralization occurs in a portion of an approximately 140 m wide tonalite sill that is bounded to the north by mafic metavolcanic rock and to the south by gabbro. The tonalite is reported to be crosscut by narrow mafic dikes and contains possible xenoliths of gabbro. The tonalite is crosscut by a number of westerly to northwesterly trending shear zones and quartz veins of varying orientations. D.B. McKay (2004) indicated that the shear zones exhibit iron carbonate alteration and contain disseminated pyrite, whereas the quartz veins are typically mineralized with minor quantities of disseminated pyrite. The most significant quartz vein is up to 1.1 m wide, is exposed over a strike length of 70 m, and has an orientation ranging between 110–120/70–75.

Surface sampling of this showing and another stripped area approximately 50 m to the west was reported by D.B. McKay (2004) to have returned erratic gold assay values, with the most notable channel sample result being 4598 ppb Au over 0.2 m from the wide vein, and the most significant grab sample assay being 21 585 ppb Au from a pyrite-rich sample collected from a 3 cm wide vein. Gold mineralization is reported to have been largely confined to the quartz veins. Sampling reported by Janes, Seim and Storey (1989) did not return any significant gold values.

## SHONIA LAKE NARROWS

| | |
|---|---|
| *Location:* | UTM Zone 15, 607000E 5714185N<br>[occurrence 27 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000282 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on a reported assay of 560 ppb Au reported by BHP Minerals Canada (1992a) from a grab sample collected from the Shonia Lake tonalite intrusion.

## SHOWING #8 (McVICAR LAKE #11)

| | |
|---|---|
| *Location:* | UTM Zone 15, 606759E 5713383N<br>[occurrence 25 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00014 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This gold showing was reported by Allen (1986) to occur near at a location where a series of felsic (quartz monzonite) intrusions are in contact with felsic metavolcanic (tuff) rock. The intrusions were described by Allen (1986) as a series of southeast-striking bands and pods, whereas the tuff is finely bedded at 323/83. The contact zones between the intrusions and the felsic metavolcanic rock are reported to consist of 2 cm to 1 m of mafic material. Gold mineralization was reported to occur in the felsic intrusive rocks that are characterized by moderate iron carbonate alteration, scattered quartz stringers, and disseminated pyrite mineralization (1 to 5% with local concentrations up to 30%). A correlation between pyrite and gold concentrations was reported by Allen (1986), with the most notable reported assay being 0.052 ounce per ton gold from a 1.5 m channel sample.

## SOR LAKE SILL

| | |
|---|---|
| *Location:* | UTM Zone 15, 602544E 5713230N<br>[occurrence 15 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/12 (SE) |
| *MNDM Township Area:* | Stoughton Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O12SE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

The Sor Lake sill is a tonalite intrusion hosting a number of gold occurrences within an area that is approximately 100 to 300 m wide and up to 2 km long (D.B. McKay 2004). The locations of the 5 gold showings that make up this occurrence were provided by D.B. McKay (2004, *see* Figure 3); this figure also indicates that a portion of the north contact of this intrusion coincides with the Lower McVicar fault.

Two styles of gold mineralization were noted in the Sor Lake sill by D.B. McKay (2004).

The first type consists of the erratic distribution of gold in relatively narrow (1 cm to 2 m wide) quartz-carbonate veins. These veins typically strike northeasterly, are discontinuous, and cover a relatively short strike length. The host tonalite intrusion was described by D.B. McKay (2004) as being variously altered and deformed, with alteration consisting of calcium and iron carbonate, sericite and silicification. The tonalite also contains disseminated pyrite that may reach concentrations of up to 2 to 3% in localized areas.

A number of late shear and fault zones were noted in the area by D.B. McKay (2004). One of these shears, located in the vicinity of the most significant known vein (referred to by D.B. McKay (2004) as occurrence #6), is reported to strike between 104 and 111 and dips 85° to the south. Shears with similar orientations were also shown by D.B. McKay (2004) on detailed maps of a trench (occurrence #10) located approximately 1 km to the east of occurrence #6.

The large vein at occurrence #6 was described by D.B. McKay (2004) as a locally vuggy, white to smoky grey quartz ± iron carbonate vein. The vein is up to 2 m wide, covers an exposed strike length of 35 m, and is oriented 060/80. The vein narrows and bifurcates to the east, and is reported to be truncated by the east-southeast-striking shear zone. Information provided by D.B. McKay (2004, *see* Map P) indicates that some quartz veins are truncated by this shear zone, whereas others crosscut and postdate it. Mineralization was reported by D.B. McKay (2004) to consist of disseminated pyrite, with occasional visible gold. Numerous smaller veins with similar orientations and mineralization were also mapped by D.B. McKay (2004) in the trench at occurrence #10.

Gold values in these areas of quartz veining are reported to generally have a positive correlation with pyrite content. The most significant assay reported from occurrence # 6 by D.B. McKay (2004) was 3.20 g/t Au over 1.0 m in a channel sample collected from silicified tonalite adjacent to a disrupted portion of the large vein. A grab sample assay of vein material from a 9 cm wide vein at occurrence #10 was reported by D.B. McKay (2004) to have assayed 122.94 g/t Au. Fumerton (1997) reported an assay of 1.65 g/t Au over a true width of 1.75 m in McVicar Minerals DDH MV97-1. This drill hole targeted the large quartz vein at occurrence #6.

The second type of mineralization described by D.B. McKay (2004) in the Sor Lake sill consists of gold associated with 2 to 3% disseminated coarse- to very coarse-grained euhedral pyrite. This mineralization is found at occurrence #10 of D.B. McKay (2004). The known extent of this mineralization is restricted to 2 irregular-shaped zones that cover a total area of approximately 70 $m^2$ adjacent to the northern contact of the sill with intermediate to felsic metavolcanic rocks. A 1.0 m channel sample of this material was reported by D.B. McKay to have assayed 8.83 g/t Au.

## SOR LAKE SILL SHEAR (McVICAR LAKE #10)

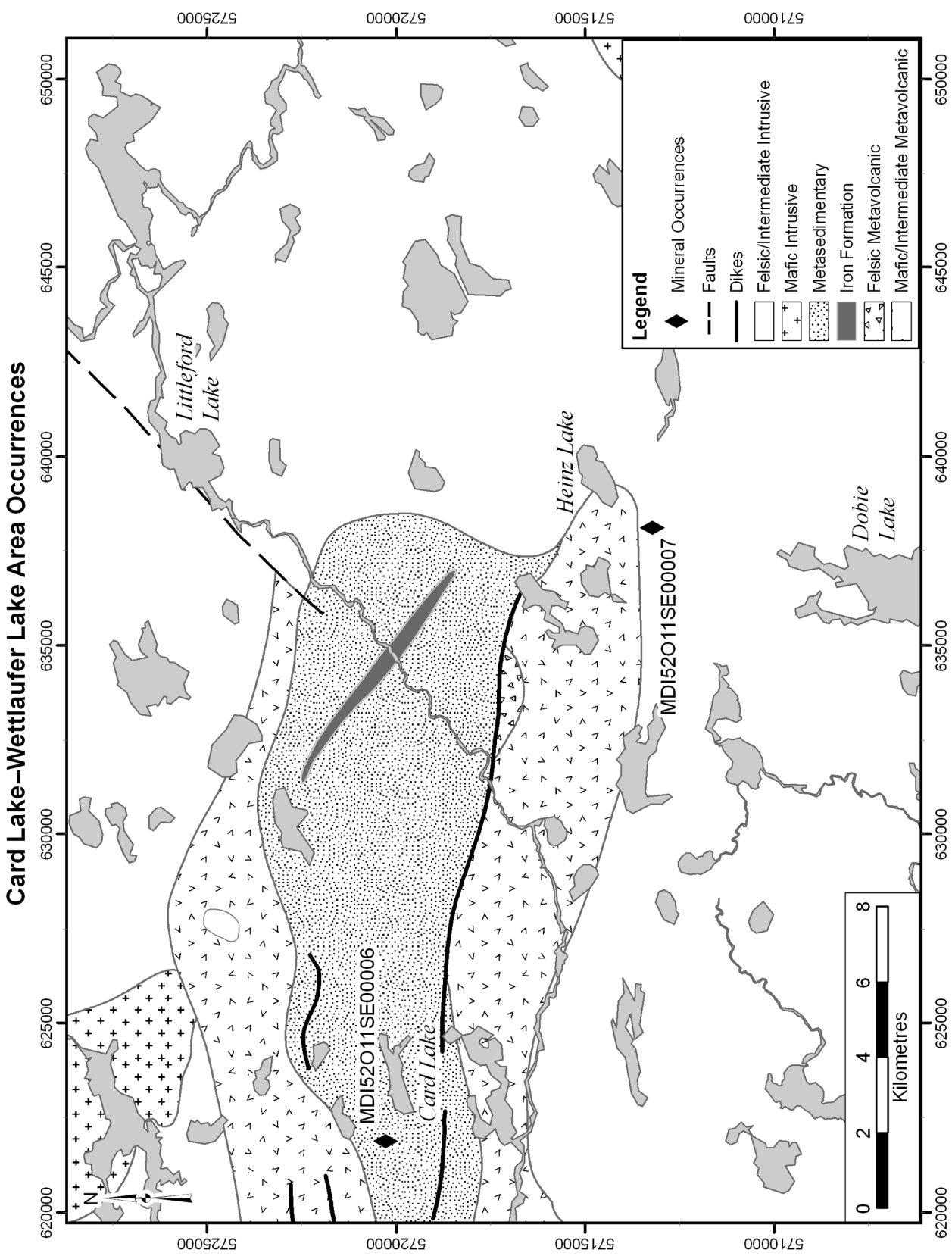
| | |
|---|---|
| *Location:* | UTM Zone 15, 604664E 5713021N<br>[occurrence 16 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O11SW00013 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Allen (1986) indicated that this gold occurrence is located near the contact between the Sor Lake felsic sill and a mafic (gabbro) intrusion. A number of easterly to east-southeast-striking and steeply southward-dipping shears containing quartz stringers, pods and lenses were mapped by Allen (1986) in both rock types, although shearing was indicated to be more strongly developed in the felsic intrusive rock. The most notable reported assay form this zone was 0.029 ounce per ton gold over 1.0 m from a channel sample across a major east-striking fracture plane in the felsic intrusive.

## SOUTH SHONIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 607190E 5714572N<br>[occurrence 28 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SW) |
| *MNDM Township Area:* | McVicar Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000281 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

This occurrence is based on a reported assay of 1100 ppb Au reported by BHP Minerals Canada (1992a) from a grab sample collected from the Shonia Lake tonalite intrusion.




NTS 52 O: Card Lake–Wettlaufer Lake area occurrences

# CARD LAKE–WETTLAUFER LAKE AREA OCCURRENCES

## Card Lake Area

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1969–1970*: Geophysical surveys and diamond drilling by Card Lake Copper Mines Ltd.

### General Geology

Mapping by Fenwick (1971) indicated that the rocks in the immediate vicinity of Card Lake are part of an approximately 5 km wide metasedimentary sequence that consists of conglomerate, greywacke, argillite, iron formation and their metamorphosed equivalents. To the north of Card Lake, the metasedimentary sequence is underlain by mafic metavolcanic rock mapped as amphibolite (Fenwick 1971). The Card Lake iron formation is located near the inferred contact between the metavolcanic and metasedimentary sequences.

### Structural Geology

Fenwick (1971) interpreted that the supracrustal rocks of the Lang Lake greenstone belt have been folded into an isoclinal syncline structure. The axis of this structure trends approximately 070 and plunges at 40 to 60° to the east. The axis of the fold has been mapped between Lang Lake and Boyes Lake to the west, and was tentatively interpreted by Fenwick (1971) to pass through Card Lake. Bedding and foliation orientations are approximately parallel in the Card Lake area, with strike generally ranging from east- to east-northeast and near-vertical dip.

### Deposit Geology

The geology of each of the individual deposits is described below.

### CARD LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 621871E 5720277N<br>[occurrence 36 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SE) |
| *MNDM Township Area:* | Cannon Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-Type Iron Formation |
| *MDI Reference Number:* | MDI52O11SE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Darke (1970) indicated that 3 diamond-drill holes were undertaken by Card Lake Mines at this location to test geophysical (magnetic) anomalies. The lithology responsible for the anomalies in all cases was indicated to be sequences of banded magnetite iron formation. Darke (1970) reported that no significant sulphides were encountered in the iron formation. However, pegmatite stringers mineralized with molybdenite were reported to have been encountered during the drilling.

Testing of the wide (no figures are provided) iron formation unit was reported by Darke (1970) to have assayed up to 35% soluble iron.

## Wettlaufer Lake Area

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1969–1971*: Trenching, geophysical surveys and diamond drilling by Card Lake Copper Mines Ltd.

### General Geology

The Wettlaufer Lake–Heinz Lake area is located in the southeastern corner of the Lang Lake greenstone belt. Fenwick and Srivastava (1972) indicated that the supracrustal rocks in this area are dominantly mafic metavolcanic rock (mostly massive and pillowed flows with some tuffaceous units). The supracrustal rocks are bounded to the south and east by granitic intrusive rock.

### Structural Geology

Fenwick and Srivastava (1972) interpreted that the supracrustal rocks of the Lang Lake greenstone belt have been folded into an isoclinal syncline structure. The axis of this structure trends approximately 070 and plunges at 40 to 60° to the east. The axis of the fold has been mapped between Lang Lake and Boyes Lake to the west, and the supracrustal rocks in the Wettlaufer Lake area are interpreted to be located on the southern limb of this syncline. Foliation orientations measured in this area have strike orientations ranging from west-northwest to east-northeast with near-vertical dip.

### Deposit Geology

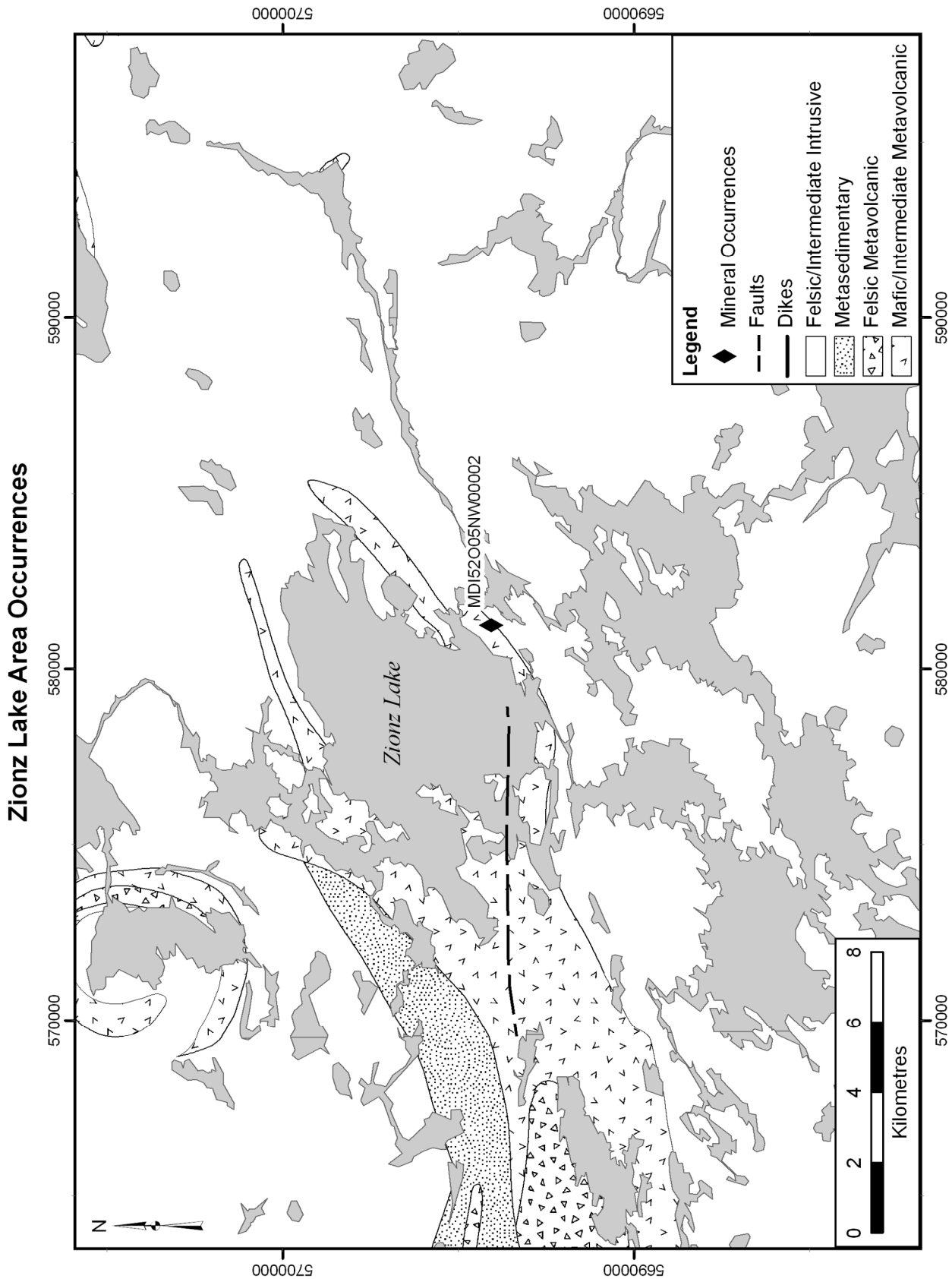
The geology of the deposit is described below.

## WETTLAUFER LAKE PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 15, 638111E 5713215N<br>[occurrence 37 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/11 (SE) |
| *MNDM Township Area:* | Cannon Lake Area |
| *Commodities:* | Cu, Ni, Au, Mo, Ag |
| *Status:* | Prospect |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O11SE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lang Lake greenstone belt / Confederation assemblage |

Darke (1970) indicated that this occurrence has been exposed in surface trenches that contain anomalous concentrations of pyrite and pyrrhotite. However, no description of the host lithology was provided. Diamond-drill hole logs for 5 boreholes undertaken by Card Lake Copper Mines in 1970 (DDH numbers 1, 2, 3, 6 and 7) indicate that anomalous copper mineralization generally occurs in units logged as andesitic tuff (AFRI# 52O11SE8949). Numerous felsic intrusive units generally described as pegmatite have been logged in close proximity to the mineralized sections. Mineralization in the andesite tuff is generally indicated to consist of pyrrhotite and chalcopyrite. The sulphide concentration is indicated to be as high as 5%, with mineralization generally occurring in seams and as fracture fillings. In addition, narrow pegmatitic stringers and veins mineralized with chalcopyrite, pyrite, pyrrhotite and molybdenite were logged in drill hole No. 7.

The most notable assays reported from the surface showing were 6.5% Cu and 0.18% Ni (Darke 1970). Significant copper mineralization was reported from a number of diamond-drill intersections in DDH numbers 1, 2, 3 and 7 (AFRI# 52O11SE8949). The most significant reported result was a 3.05 m section of DDH No. 7, which graded 1.46% Cu. Another 0.9 m long section from this borehole assayed 1.87% Cu. Anomalous silver and gold assays (up to 0.23 ounce per ton silver and 0.05 ounce per ton gold) were also reported from DDH No. 7. Other notable assay results included a 3.6 m long section of anomalous mineralization in DDH No. 1 that averaged 0.22% Cu (including 0.54% over 0.6 m), a separate 0.6 m interval from DDH No. 1 containing 0.44% Cu and 0.27% Ni, a 0.6 m section of DDH No. 2 that assayed 1.10% Cu and 0.17% Ni, and a 2.4 m section of DDH No. 3 that averaged 0.35% Cu.




NTS 52 O: Zionz Lake area occurrence

# ZIONZ LAKE AREA OCCURRENCE

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1969*: Geological mapping, prospecting, trenching and sampling by Fort Reliance Minerals.

## General Geology

Sage and Breaks (1982) indicated that the Zionz Lake area is underlain by a metavolcanic–metasedimentary rock sequence considered to be an extension of the Birch–Uchi greenstone belt located to the west. These rocks were classified as part of the Confederation assemblage by Stott and Corfu (1991).

The dominant lithology in the Zionz Lake area is reported to be mafic to intermediate metavolcanic rocks that have been metamorphosed to upper greenschist to middle amphibolite grade. Minor amounts of felsic to intermediate metavolcanic rock are reported to occur near the southern margin of the belt. A significant clastic metasedimentary rock sequence (largely greywacke) was mapped in the northern portion of the belt. Two thin iron formation sequences were also reported to occur in this belt (Sage and Breaks 1982).

The supracrustal rocks are bounded to the north, south and east by felsic intrusive rock. Sage and Breaks (1982) described the intrusion to the north of the belt as a metamorphosed granodiorite. A later granitic unit centred on Zionz Lake (Zionz Lake stock) crosscuts the older granodiorite.

## Structural Geology

Hudec (1969) indicated that the general structural trend (i.e., foliation and stratigraphic layering) in the Zionz Lake area is northeast, with these structures generally dipping steeply to moderately toward the northwest (80 to 45°). Sage and Breaks (1982) interpreted that the supracrustal rocks of this belt were folded into a synclinal structure. Hudec (1969) also suggested the presence of 2 significant fault structures in the area, and noted significant shearing of mafic metavolcanic rock on the southeast shore of Zionz Lake, where disseminated sulphide mineralization has been documented.

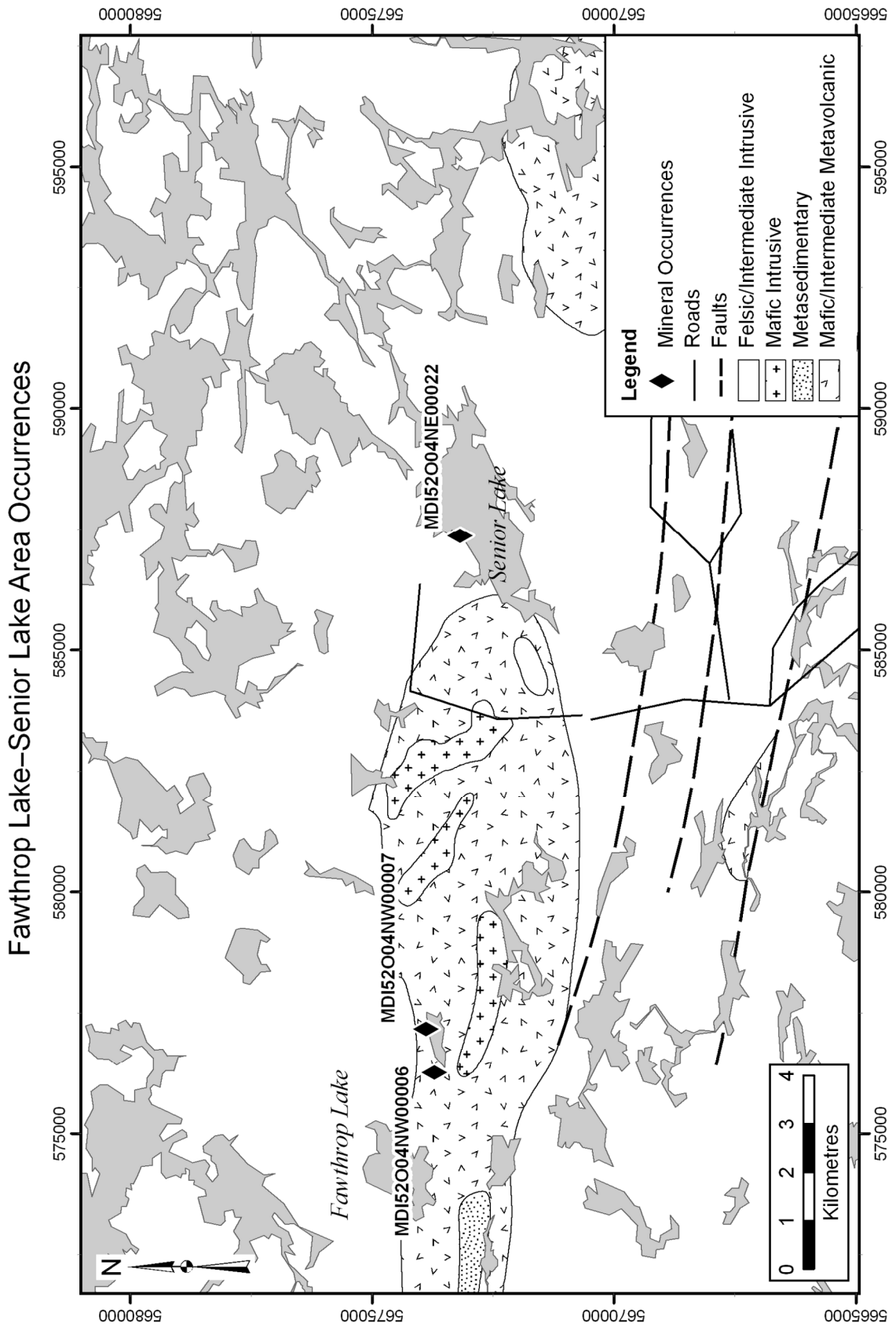
## Deposit Geology

The geology of the deposit is described below.

## FORT RELIANCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 581239E 5694062N<br>[occurrence 38 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/5 (NW) |
| *MNDM Township Area:* | Zionz Lake Area |
| *Commodities:* | Cu |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number:* | MDI52O05NW00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Birch–Uchi greenstone belt / Confederation assemblage |

This discretionary occurrence is based on a reported copper assay of 0.04% Cu obtained from a sample of sheared, amphibolitized mafic metavolcanic rock that occurs on a shoal in Zionz Lake (Hudec 1969). Mineralization at this location is reported to consist of disseminated pyrite and chalcopyrite.




NTS 52 O: Fawthrop Lake–Senior Lake area occurrences

# FAWTHROP LAKE–SENIOR LAKE AREA OCCURRENCES

***Access***: Air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: *1969*: Trenching, sampling and diamond drilling in the Fawthrop Lake area by Madsen Red Lake Gold Mines.

## General Geology

The Fawthrop Lake–Senior Lake area is underlain by a narrow (1.1 to 3.9 km wide) east-trending supracrustal rock sequence that represents an eastern extension of the Birch–Uchi greenstone belt. Sage and Breaks (1982) indicated that the belt is dominated by mafic to intermediate metavolcanic rocks, with only local occurrences of felsic to intermediate metavolcanic and metasedimentary rock.

Mafic to ultramafic intrusions have been mapped in the area between Fawthrop and Senior lakes, whereas east-striking quartz and/or feldspar porphyry dikes are reported to be common in the eastern portions of the belt. The supracrustal rocks are bounded to the north and south by large granitoid intrusions.

## Structural Geology

Sage and Breaks (1982) reported that foliation in the Fawthrop–Senior lakes area generally strikes approximately east, and that the supracrustal rocks form a westward-plunging (30°) synform structure. It has also been interpreted that the supracrustal rocks in this belt were likely to have once formed a single continuous sequence eastward linked to similar rocks in the Wesleyan Lake area at the west end of the Meen–Dempster greenstone belt.

## Deposit Geology

The geology of each of the individual deposits is described below.

## FAWTHROP (FERDINAND) LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 577174E 5673883N<br>[occurrence 40 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NW) |
| *MNDM Township Area:* | Ferdinand Lake Area |
| *Commodities:* | Mo, Li |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O04NW00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Birch–Uchi greenstone belt / |

According to Sage and Breaks (1982), the Ferdinand Lake occurrence is located near the contact between mafic metavolcanic rock of the Birch–Uchi greenstone belt to the south with massive to foliated granitic rock to the north. Molybdenite mineralization occurs within the intrusion, and within narrow felsic dikes that concordantly intrude the mafic metavolcanic rock.

Sage and Breaks (1982) indicated that the mineralized felsic dikes vary in width from 1 to 5 m and consist of pegmatitic, leucocratic, biotite granodiorite to quartz monzonite. Mineralization within the larger granitic intrusion (trondhjemite) north of the metavolcanic contact is localized in an approximately

3 m wide biotite-rich zone that contains a 45 cm wide quartz vein oriented parallel to foliation. Late pegmatite intrusions were reported by Sage and Breaks (1982) to crosscut the trondhjemite at the eastern end of the showing.

Mineralization was reported by Innes (1969) to occur in an approximately 9 to 12 m wide zone having a strike length (east-west) of approximately 60 m (exposed by 9 trenches). Sage and Breaks (1982) described mineralization in the pegmatite dikes as consisting of less than 1% coarse-grained molybdenite occurring in clots and clusters up to 2.5 cm in diameter, frequently in association with segregations of yellow-green muscovite. The most significant mineralization was reported to occur in a narrow (1 cm wide) zone exposed in a series of trenches at the contact between the quartz vein and the biotite-rich zone within the trondhjemite intrusion. The mineralized zone was reported by Sage and Breaks (1982) to contain 20 to 30% molybdenite.

Notable assays reported from this zone include 0.36% Mo in a grab sample collected by Sage and Breaks (1982), 2.68% $MoS_2$ in a grab sample collected by Innes (1969) and 0.96% $MoS_2$ over 0.64 m in Madsen Red Lake Gold Mines DDH No. 2 (AFRI# 52O04NW8966). Significant $MoS_2$ assays were also reported from representative muck samples collected across the mineralized zone by Innes (1969). Sage and Breaks (1982) also reported anomalous lithium values of 0.05 to 0.5% from an emission spectrographic analysis.

## FAWTHROP (FERDINAND) LAKE #2 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 576264E 5673715N<br>[occurrence 39 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NW) |
| *MNDM Township Area:* | Ferdinand Lake Area |
| *Commodities:* | Mo, Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O04NW00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Birch–Uchi greenstone belt / |

This molybdenum occurrence was described by Innes (1969) as being associated with quartz veins in granitic gneiss. One mineralized vein was described as a relatively flat-lying vein ranging from 1 to 15 cm wide, whereas others were described as east-striking, steep southerly dipping veins 1 to 10 cm wide. The steep-dipping veins are apparently only found at this location below the flat-lying vein (i.e., possibly displaced by faulting along this apparently later structure).

The mineralization was reported to occur in an area of approximately 60 by 30 m that was exposed in 5 trenches, and consists of molybdenite flakes in both quartz and the adjacent wall rock. Innes (1969) indicated that the molybdenum mineralization appeared to only be found in close proximity to the flat-lying vein (i.e., within 2 m). However, mineralization in the steep-dipping veins more than 2 m below the flat-lying vein was reported to contain increasing concentrations of pyrite, pyrrhotite and chalcopyrite.

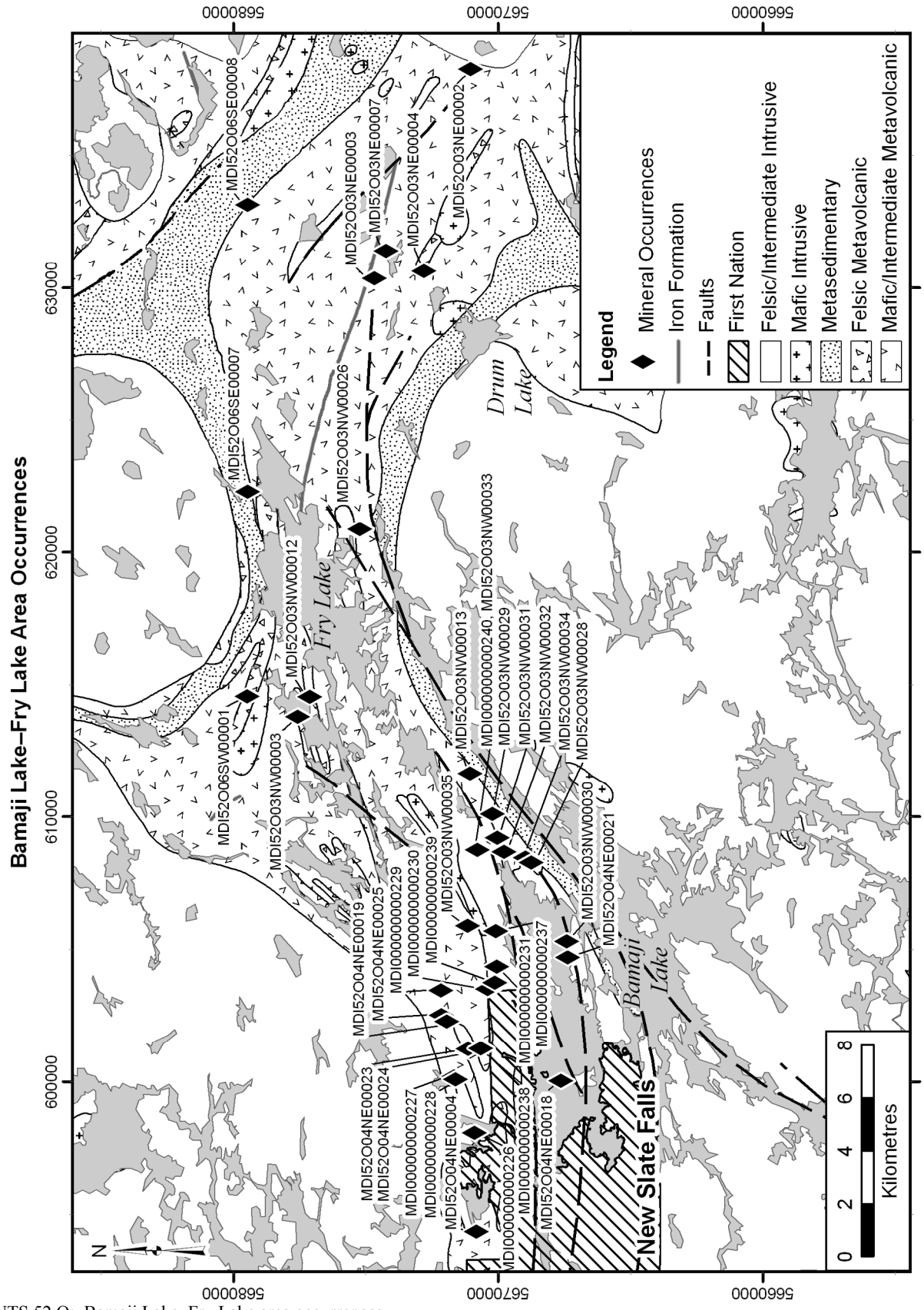
Innes (1969) reported surface sample assays of up to 0.49% $MoS_2$. An assay of 0.08% $MoS_2$ was reported over 0.58 m in Madsen Red Lake Mines DDH No. 3 (AFRI# 52O04NW8967).

## SENIOR LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 587375E 5673182N<br>[occurrence 41 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Mo |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O04NE00022 |
| *Subprovince/Belt/Assemblage*: | Uchi / Birch–Uchi greenstone belt / |

The Senior Lake occurrence was described in Wallace (1985) as a mineralized quartz vein that occupies the intrusive contact between a fine- to medium-grained felsite to the south with a weakly foliated granitic intrusion to the north. The mineralized vein is reported to be up to 20 cm thick and is exposed over a strike length of approximately 25 m. Mineralization in the vein consists of molybdenite (occurring as disseminations, banded disseminations, stringers and paint over a 5 m strike length) and disseminated pyrite. The felsite material was also reported to be mineralized with disseminated pyrite and crosscut by epidote stringers. Minor dikelets of coarse-grained to pegmatoid quartz monzonite were also reported to crosscut the felsite and granitic intrusion. Five additional minor occurrences mineralized with minor pyrite and trace molybdenite ± chalcopyrite at various locations along the shore of Senior Lake were also reported by Wallace (1985).

The occurrence description provided in Wallace (1985) indicates that the vein locally contains up to 15% $MoS_2$. Sage and Breaks (1982) reported an assay of 0.36% Mo and 0.61% Bi from this occurrence.




NTS 52 O: Bamaji Lake–Fry Lake area occurrences

# BAMAJI LAKE–FRY LAKE AREA OCCURRENCES

***Access***: All-weather road access to Slate Falls and water access via Bamaji Lake, or air access from Red Lake, Pickle Lake or Sioux Lookout.

***Exploration History***: The *pre-1993* exploration history for individual occurrences of the area was summarized by Seim (1993). D'Silva and Parker (2000) and Nelson (2002) provided a summary of exploration activity that has occurred *since 1993*.

## General Geology

The supracrustal rocks of the Bamaji–Fry lakes area form the southern half of the Meen–Dempster greenstone belt, and represent a volcano-sedimentary stratigraphy of folded mafic to felsic metavolcanic and chemical to clastic metasedimentary rocks (Dinel, Pettigrew and Gagnon 2006; Dinel and Pettigrew 2008). The far northern portion of this area is underlain by clastic metasedimentary rocks of the Billett assemblage (Stott 1996). Immediately to the south of the Billett assemblage rocks, the belt is dominated by a sequence of north-facing, calc-alkalic dacitic and andesitic pyroclastic units that were assigned to the St. Joseph assemblage by Hamilton et al. (2007). Immediately to the south of the interpreted St. Joseph assemblage rocks is an older, south-facing sequence dominated by tholeiitic pillowed and massive flows. This sequence was assigned to the Confederation assemblage by Hamilton et al. (2007). The mafic metavolcanic-dominated sequence is, in turn, overlain by a thin intermediate to felsic pyroclastic unit (Wallace 1985), and a sequence of metasedimentary rocks that have been interpreted by Hamilton et al. (2007) to stratigraphically connect to the distal volcaniclastic sequence of the St. Joseph assemblage exposed further to the east in Johnston Bay of Lake St. Joseph.

The supracrustal rocks are bounded by granitoid rock of the Scanes Lake pluton to the west, the North Bamaji pluton and Bamaji Lake pluton to the south, and the Pembina Tonalite Gneiss to the east. The greenstone belt is also intruded by a number of late tectonic granites, including the Obaskaka Lake pluton, Fry Lake stock and McVean Lake stock. Several large mafic intrusions were also mapped throughout the belt by Dinel, Pettigrew and Gagnon (2006; *see also* Dinel and Pettigrew 2008). Notably, Hamilton et al. (2007) indicated that the boundary between the St. Joseph and Confederation assemblage rocks in the central portion of the belt is marked by a long, narrow, sheet-like gabbroic body.

## Structural Geology

Stratigraphy and foliation in this belt are generally subparallel and steeply dipping, with strike directions ranging from approximately east-northeast in the western portion of the belt, east in the central portion, to west-northwest in the eastern portion. Dinel, Pettigrew and Gagnon (2006) indicated that the intensity of the cleavage is heterogeneous, with some highly concentrated strain zones, most notably in proximity to the Bamaji Lake fault zone.

Two major fold structures were identified in this area by Wallace (1983a, 1983b, 1985). These structures include the Fry Lake anticline and the Rockmere–Wesleyan syncline. Both of these structures have approximately east-striking axial planes with east-plunging axes. A second approximately northeast-striking syncline was mapped in the in the northwestern portion of the area by Dinel, Pettigrew and Gagnon (2006).

The most notable fault structure in this area is the Bamaji Lake fault zone. This is an approximately northeast-striking structure that occurs along the southern boundary of the greenstone belt. Wallace (1985) indicated that this fault forms a cataclastic deformation zone that extends approximately 300 m

from the centre of the fault. Wallace (1985) also noted the occurrence of a number of approximately east-striking splay faults to the west of the Bamaji Lake fault that crosscut the North Bamaji pluton. Parker, D'Silva and Gertzbein (1995) described these structures as forming an extensive regional gold-bearing system in the area that has been identified as the Slate Falls deformation zone. Gold and uranium mineralization has also been noted at numerous locations in close proximity to the Bamaji Lake fault.

## Deposit Geology

The following occurrences and prospects have experienced exploration activity since 1993 or were not included in the compilation of Seim (1993). The geology of each of the individual deposits is described below.

### BAD-02

| | |
|---|---|
| *Location:* | UTM Zone 15, 604370E 5670055N<br>[occurrence 55 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000237 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

This occurrence is based on an anomalous gold assay of 0.023 ounce per ton gold reported by Parker, D'Silva and Gertzbein (1995) from a sample of quartz vein material hosted within trondhjemite. The quartz is reported to be translucent white to grey, with hematitic staining and minor pyrite mineralization.

### CARPENTER ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 600190E 5671674N<br>[occurrence 46 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000227 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

The Carpenter zone was described by Nelson (2002) as a shear–vein system hosted in granitic rocks that contain numerous mafic volcanic xenoliths. The mineralized shear zone is a subvertical 110-striking structure that is approximately 6 m wide. The shear zone contains quartz veins and sulphide mineralization as well as biotite, sericite, carbonate and talc alteration. Nelson (2002) indicated that shearing is most pronounced at the eastern end of the zone and appears to pinch out toward the west. Nelson reported that surface sampling at this location produced assay results of up to 1.8 g/t Au and 21.2 g/t Ag.

## CORNER

| | |
|---|---|
| *Location:* | UTM Zone 15, 603513E 5670409N<br>[occurrence 53 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag, Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000230 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The Corner occurrence is located in an east-striking near-vertical shear zone and quartz vein within mafic metavolcanic rock (Parker, D'Silva and Gertzbein 1995). The shear zone was reported to be approximately 1 m wide. Parker, D'Silva and Gertzbein (1995) indicated that the mineralized shear coincides with the hinge zone of an antiformal fold structure that plunges to the west at an angle of 20°. Mineralization consisting of pyrite, chalcopyrite and sphalerite in quartz stringers was reported by Parker, D'Silva and Gertzbein (1995) from a sample collected from this occurrence. The most notable assays reported from this zone were 1.826 ounces per ton gold and 7.185 ounces per ton silver. Parker, D'Silva and Gertzbein (1995) also reported anomalous copper (0.56% Cu) and zinc (0.331% Zn) assays from this occurrence.

## FLY

| | |
|---|---|
| *Location:* | UTM Zone 15, 603461E 5672157N<br>[occurrence 52 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000229 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The Fly occurrence was reported by Parker, D'Silva and Gertzbein (1995) to be hosted in a unit of folded and sheared banded chert-magnetite iron formation. The mineralized iron formation strikes approximately east, and is exposed for approximately 20 m across strike. Parker, D'Silva and Gertzbein (1995) reported that Sulpetro Minerals obtained a chip sample assay of 0.1 ounce per ton gold over 2.5 m.

## FTM ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 605901E 5671148N<br>[occurrence 56 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O03NW00035 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The following description of the geology of the FTM zone was provided by Seim (1993 *from* Janes, Seim and Storey 1990):

> Gold mineralization occurs in two modes at the FTM occurrence. The first is in a smokey-grey, quartz-tourmaline-sulphide vein hosted in a north-trending, brittle, shear zone cutting mafic metavolcanics. The second mode of occurrence is in quartz-tourmaline stringers and veins cutting the quartz-feldspar porphyries.
>
> The quartz-tourmaline-sulphide vein is exposed in a shallow trench over a length of approximately 10 m. The vein is up to 30 cm wide and is hosted by a brittle, shear zone marked by a well-defined cleavage in the mafic metavolcanics. The vein and shear zone cut a quartz-feldspar porphyry at the south end of the trench, but do not extend into the porphyry 2 m north of the trench. The vein and the cleavage strike 350° and dip 73° east. The contact between the porphyry and the mafic metavolcanics at the south end of the trench is offset 30 cm, in a right-handed manner, by the shear zone. . . .
>
> The second mode of gold mineralization at the FTM gold occurrence is associated with quartz-tourmaline stringers and veins in the quartz-feldspar porphyries. . . . The porphyries exhibit an 080° foliation that dips 73° north. The quartz-tourmaline stringers and veins follow generally northeast- to southeast-trending fractures and shear in the porphyries. These stringers and veins have widths up to 15 cm, but average less than 1 cm in width. A number of the stringers and veins interconnect to form a stockwork. Trace- to 1% -pyrite is found in the porphyry next to the quartz-tourmaline stringers and veins.

Seim (1993) reported assays of up to 76.8 g/t Au and 2.54 ounces per ton silver from this occurrence.

## GROUP 42

| | |
|---|---|
| *Location:* | UTM Zone 15, 614568E 5679476N<br>[occurrence 70 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SW) |
| *MNDM Township Area:* | Nabemakoseka Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O06SW00001 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / St. Joseph assemblage |

This discretionary occurrence is based on the reported presence of massive and disseminated sulphides on the log for Cochenour Willans–Selco diamond-drill hole B-42-70-4 (AFRI# 52O06SW0010). An approximately 5.5 m section of material logged as black meta-argillite was reported to contain 20 to 30% fine and massive bands of pyrite with trace sphalerite and chalcopyrite. Approximately 60 cm of massive sulphide was also noted within this mineralized horizon. The meta-argillite unit was reported to be bounded on both sides (i.e., to the northeast and southwest) by siliceous tuff that was reported to contain up to 8% disseminated pyrrhotite. The upper portion of the drill hole (i.e., northeast of the mineralized horizon) was logged as mafic metavolcanic rock and amphibolite.

Massive sulphide mineralization was also noted in a number of other drill holes advanced by Cochenour Willans–Selco on the same property. For example, an 8.5 m section of massive pyrite containing trace sphalerite was logged in DDH B-42-70-1A (AFRI# 52O06SW0010). The massive sulphides were found between horizons logged as felsic tuffaceous greywacke and volcanic breccia. Disseminated pyrite and/or pyrrhotite were also noted in these horizons. Amphibolitized mafic metavolcanic rock was also logged in the upper portion of this drill hole to the northeast of the felsic metavolcanic rock and massive sulphide.

Disseminated sulphides consisting of pyrite, pyrrhotite and occasional sphalerite and chalcopyrite were noted in the felsic metavolcanic–metasedimentary sequence on a number of other drill-hole logs in AFRI# 52O06SW0010.

## HYDROLINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 605708E 5670098N<br>[occurrence 57 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000231 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

Parker, D'Silva and Gertzbein (1995) reported that mineralization at the Hydroline occurrence consists of pyrite and magnetite with chert in rock described as chlorite muscovite schist. Orezone Resources (1997) further reported that mineralization is associated with discontinuous quartz veins and irregular masses in sheared (101/90) chlorite muscovite schist. The shear zone is reported to be folded, with the fold hinge plunging 30° to the west. This occurrence is located in close proximity to the contact between the chloritic schist and trondhjemite intrusive rocks related to the North Bamaji Lake intrusion [North Bamaji pluton] (Orezone Resources 1997). Assays of up to 0.067 ounce per ton gold and 0.236 ounce per ton silver were reported by Parker, D'Silva and Gertzbein (1995) from this zone. Mapping by Wallace (1983b) also indicated the presence of a radioactive anomaly in the vicinity of this occurrence.

## J. LOON ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 598069E 5670897N<br>[occurrence 44 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000226 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

The J. Loon zone was described by Nelson (2002) as a subvertical, approximately 1 m wide, 075-striking shear zone that occurs within trondhjemite rocks of the North Bamaji pluton. The shear zone contains quartz veins and sulphide mineralization (pyrite, chalcopyrite and molybdenite) as well as biotite, sericite, carbonate and talc alteration. The interpreted strike length of this mineralized zone is 370 m. Nelson (2002) indicated that surface samples collected from this zone assayed up to 47.8 g/t Au and 300.8 g/t Ag.

## L1 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 600080E 5671617N<br>[occurrence 45 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag, Cu, Zn, Sb |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI000000000228 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

The L1 zone is a mineralized shear zone hosted in granitic rocks (Nelson 2002). This structure is approximately 40 cm wide, dips subvertically and strikes 090 to 110. The shear zone contains quartz veins and sulphide mineralization (pyrite, chalcopyrite and tetrahedrite) as well as biotite, sericite, carbonate and talc alteration. The mineralized zone has been traced over a strike length of approximately 700 m. Nelson (2002) reported that the most significant assays from this zone included 6.7 g/t Au and 297 g/t Ag. Anomalous levels of antimony (0.305% Sb), copper (0.671% Cu), zinc (0.314% Zn) and lead (0.019% Pb) were also reported by Parker, D'Silva and Gertzbein (1995).

## L15 ZONE (WESLEYAN LAKE #5)

| | |
|---|---|
| *Location:* | UTM Zone 15, 602522E 5672145N [occurrence 51 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag, Cu, Pb, Sb, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O04NE00025 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The L15 zone consists of multiple east-striking vertical shear zones that are up to 1 m wide. The mineralized zone has been traced for a strike length of approximately 400 m and occurs in mafic metavolcanic rock and felsic porphyry dikes. The shear zone contains quartz veins and sulphide mineralization consisting of pyrite, chalcopyrite and sphalerite (Parker, D'Silva and Gertzbein 1995). Biotite, sericite, carbonate and talc alteration were also reported by Nelson (2002).

Significant assay results include 7.3 g/t Au and 229 g/t Ag, with elevated concentrations of antimony (2153 ppm Sb), copper (4342 ppm Cu), zinc (1166 ppm Zn) and lead (3653 ppm Pb) reported by D'Silva and Parker (2000). Additional assays obtained by Sulpetro Minerals in the 1980s were reported by Seim (1993).

## PATH ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 601250E 5671139N [occurrence 48 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O04NE00023 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The following description of the geology of the Path zone was provided by Seim (1993):

> The Path Vein occurrence is contained in an east-trending, south-dipping shear zone through massive, well-bedded siltstone. The shear zone has been traced by trenching for about 20 m. The Path Vein occurrence is a lensoid, possibly boudinaged, milky quartz vein. The vein varies in width between 10 cm and 30 cm. The sulphide minerals contained in the vein are pyrite, sphalerite, chalcopyrite, tetrahedrite, pyrrhotite and galena. The sulphides occur as disseminations, stringers and local masses within the vein and along the contacts of the vein with the sheared mafic metavolcanics. Total sulphide content of the vein is up to 5% though local sulphide concentrations suggest a higher content.

Orezone Resources (1997) re-interpreted the rocks in this area previously mapped as metasediments as being deformed pillowed mafic metavolcanic flows. The strained pillowed metavolcanic rock reportedly give the rock a banded appearance. Nelson (2002) also noted that the mineralized structure crosscuts mafic metavolcanic rock and intrusive felsic porphyry.

## SAMPLE 23055

| | |
|---|---|
| *Location:* | UTM Zone 15, 601260E 5670660N<br>[occurrence 49 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000238 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

This occurrence is based on an anomalous gold assay of 1343 ppb Au reported from a grab sample of silicified, rusty felsic intrusive rock (Nelson 2002). The sample description also indicated the sample was collected from a shear wider than 1 m, and that it was mineralized with 2 to 3% pyrite.

## SAMPLE 23066

| | |
|---|---|
| *Location:* | UTM Zone 15, 603760E 5670120N<br>[occurrence 54 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000239 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

This occurrence is based on an anomalous gold assay of 3774 ppb Au reported from a grab sample collected from a felsic intrusive rock containing 10 to 15% stockwork quartz veins (Nelson 2002). The sample description also indicated the dominant strike directions of the veins are 200 and 140, and that they are locally rusty and mineralized with minor pyrite.

## SAMPLE 23111

| | |
|---|---|
| *Location:* | UTM Zone 15, 608760E 5670790N<br>[occurrence 64 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000240 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

This occurrence is based on an anomalous gold assay of 993 ppb Au reported from a grab sample of white felsic intrusive rock containing quartz stringers and minor pyrite (Nelson 2002).

## SANDERSON ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 602281E 5671943N [occurrence 50 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag, Cu, Zn |
| *Status:* | Prospect |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O04NE00019 |
| *Subprovince/Belt/Assemblage:* | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The following description of the geology of the Sanderson Zone was provided by Seim (1993):

> The Sanderson occurrence or main vein is contained in a west-trending, north-dipping shear zone through mafic metavolcanics. The shear zone has been traced by trenching and diamond-drilling for about 270 m. The Sanderson occurrence is a set of "irregular, lensoid, possibly boudinaged, milky quartz veins and stringers." (Sage and Breaks, 1982). The veins vary in width up to 75 cm, but average less than 15 cm. The sulphide minerals reported in the veins are pyrite, sphalerite, chalcopyrite, tetrahedrite, pyrrhotite and galena. The sulphides occur as disseminations, stringers and local masses within the veins and along the contacts of the veins with the sheared mafic metavolcanics. Total sulphide content of the veins is up to 5% though local sulphide concentrations suggest a higher content. Visible gold has also been reported in the drill holes which cut the vein.
>
> The mafic metavolcanics in the vicinity of the occurrence are cut by irregular porphyritic biotite quartz diorite dikes.

Since 1993, the strike length of the mineralized zone has been extended from 270 to 625 m (Nelson 2002). Channel sampling of the zone from 14 crosscuts, reported by Nelson (2002), returned average values of 5.5 g/t Au and 164 g/t Ag across 0.95 m over a strike length of 170 m.

Two new mineralized shear-vein structures were reported by Nelson (2002) to have been identified immediately north and south of the original Sanderson zone. The northern structure is located approximately 30 m north of the main zone and consists of an approximately 15 cm wide quartz vein in a 0.7 m wide, east-striking, vertical shear zone. A gold assay of 6.1 g/t Au was reported from this vein by Nelson (2002). The southern shear occurs approximately 100 m south of the main zone and contains up to 5 cm wide quartz stringers that strike 110 with vertical dip. Assay values of 6.2 g/t Au and 885 g/t Ag were reported from this structure by Nelson (2002).

## TIVY

| | |
|---|---|
| *Location:* | UTM Zone 15, 594348E 5670833N [occurrence 42 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O04NE00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

Wallace (1985) indicated that the Tivy occurrence is hosted within an east-trending quartz vein. The vein occurs in a shear zone that parallels the contact between mafic metavolcanic rock and a sill-like body of trondhjemite. The vein is of varying width (up to 2 m), but is typically less than 50 cm wide and is mineralized with pyrite, chalcopyrite, pyrrhotite and galena. The most notable assay reported from this occurrence was 0.15 ounce per ton gold (Harding 1936).

## TRAIL ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 601130E 5671059N<br>[occurrence 47 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Au, Ag, Cu, Zn, Pb |
| *Status:* | Prospect |
| *Deposit Type:* | Polymetallic Vein |
| *MDI Reference Number:* | MDI52O04NE00024 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The following description of the geology of the Trail Zone was provided by Seim (1993):

> The Trail Vein occurrence is contained in a south-dipping shear zone which trends 100° through massive, well-bedded siltstone. The shear zone has been traced by trenching and drilling for about 50 m. The Trail Vein occurrence is a lensoid, possibly boudinaged, milky quartz vein. The vein varies in width between 10 cm and 15 cm. The sulphide minerals contained in the vein are pyrite, sphalerite, chalcopyrite, tetrahedrite, pyrrhotite and galena. The sulphides occur as stringers and masses within the vein. Total sulphide content of the vein is up to 5% though local sulphide concentrations suggest a higher content.

Orezone Resources (1997) re-interpreted the rocks in this area previously mapped as metasediments as being deformed pillowed mafic metavolcanic flows. The deformed pillow structures reportedly give the rock a banded appearance. Nelson (2002) indicated that the mineralized vein crosscuts mafic metavolcanic rock, clastic metasedimentary rock and granite. Nelson (2002) reported that 20 chip samples collected from this zone over a 70 m strike length averaged 15.1 g/t Au across 0.74 m.

### Occurrences and Prospects with Previously Described Deposit Geology

Geological descriptions of the following occurrences and prospects are provided in Seim (1993).

## COCHENOUR WILLANS–SELCO

| | |
|---|---|
| *Location:* | UTM Zone 15, 638263E 5671047N<br>[occurrence 77 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NE) |
| *MNDM Township Area:* | Drum Lake Area |
| *Commodities:* | Cu |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03NE00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## FIRTH, N.

| | |
|---|---|
| *Location:* | UTM Zone 15, 630263E 5674797N<br>[occurrence 74 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NE) |
| *MNDM Township Area:* | Drum Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03NE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## FLICKA

*Location:* UTM Zone 15, 613799E 5677569N
[occurrence 68 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NW)
*MNDM Township Area:* Fry Lake Area
*Commodities:* Au
*Status:* Prospect
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O03NW00003
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / St. Joseph assemblage

## FRY LAKE #1

*Location:* UTM Zone 15, 605323E 5667412N
[occurrence 59 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NW)
*MNDM Township Area:* Fry Lake Area
*Commodities:* Mo, Cu
*Status:* Occurrence
*Deposit Type:* Porphyry
*MDI Reference Number:* MDI52O03NW00030
*Subprovince/Belt/Assemblage:* Uchi / Meen–Dempster greenstone belt / North Bamaji pluton

## FRY LAKE #4

*Location:* UTM Zone 15, 608692E 5669778N
[occurrence 62 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NW)
*MNDM Township Area:* Fry Lake Area
*Commodities:* Au, Ag
*Status:* Occurrence
*Deposit Type:* Polymetallic Vein
*MDI Reference Number:* MDI52O03NW00032
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## FRY LAKE #5

*Location:* UTM Zone 15, 608784E 5670636N
[occurrence 65 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NW)
*MNDM Township Area:* Fry Lake Area
*Commodities:* Au, U
*Status:* Occurrence
*Deposit Type:* Polymetallic
*MDI Reference Number:* MDI52O03NW00033
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## FRY LAKE #6

| | |
|---|---|
| *Location:* | UTM Zone 15, 608468E 5668967N<br>[occurrence 61 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | U |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic |
| *MDI Reference Number:* | MDI52O03NW00034 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## FRY LAKE #9

| | |
|---|---|
| *Location:* | UTM Zone 15, 614547E 5677116N<br>[occurrence 69 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O03NW00012 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / St. Joseph assemblage |

## FRY LAKE #10

| | |
|---|---|
| *Location:* | UTM Zone 15, 611650E 5671057N<br>[occurrence 67 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O03NW00013 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## ISLAND–NORTH BAMAJI LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 600034E 5667644N<br>[occurrence 43 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Mo |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O04NE00018 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

## KAWASHE LAKE #2

| | |
|---|---|
| *Location:* | UTM Zone 15, 622308E 5679459N [occurrence 72 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SE) |
| *MNDM Township Area:* | Kawashe Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O06SE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Billett assemblage |

## KAWASHE LAKE #3

| | |
|---|---|
| *Location:* | UTM Zone 15, 633151E 5679452N [occurrence 73 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SE) |
| *MNDM Township Area:* | Kawashe Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O06SE00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / St. Joseph–Billett assemblages boundary |

## KIRKLAND TOWNSITE SHOWING #1

| | |
|---|---|
| *Location:* | UTM Zone 15, 610124E 5670218N [occurrence 66 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au, Th, U |
| *Status:* | Prospect |
| *Deposit Type:* | Polymetallic |
| *MDI Reference Number:* | MDI52O03NW00029 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## KIRKLAND TOWNSITE SHOWING #2

| | |
|---|---|
| *Location:* | UTM Zone 15, 609221E 5670030N [occurrence 63 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Au, Ag, Zn, U |
| *Status:* | Prospect |
| *Deposit Type:* | Polymetallic |
| *MDI Reference Number:* | MDI52O03NW00031 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## KNAPPETT, R.

| | |
|---|---|
| *Location:* | UTM Zone 15, 608280E 5668759N<br>[occurrence 60 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Cu, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic |
| *MDI Reference Number:* | MDI52O03NW00028 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## LOON

| | |
|---|---|
| *Location:* | UTM Zone 15, 604718E 5667382N<br>[occurrence 58 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/4 (NE) |
| *MNDM Township Area:* | Wesleyan Lake Area |
| *Commodities:* | Mo, Cu, Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O04NE00021 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / North Bamaji pluton |

## McVEAN LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 631398E 5674227N<br>[occurrence 75 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NE) |
| *MNDM Township Area:* | Drum Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O03NE00007 |
| *Subprovince/Belt/Assemblage:* | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## SELCO–DRUM LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 630638E 5672797N<br>[occurrence 76 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NE) |
| *MNDM Township Area:* | Drum Lake Area |
| *Commodities:* | Cu, Zn, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03NE00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / St. Joseph assemblage |

## SELCO–FRY LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 620876E 5675222N<br>[occurrence 71 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (NW) |
| *MNDM Township Area:* | Fry Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03NW00026 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

# MEEN LAKE–DEMPSTER LAKE AREA OCCURRENCES

***Access***: Air access from Pickle Lake, Sioux Lookout or Red Lake.

***Exploration History***: The *pre-1993* exploration history of the area was provided in Seim (1993). *1994–1997*: Gold production from the Golden Patricia Mine. *1995–2001*: Prospecting, trenching, geological and geophysical surveys and diamond drilling in the Duffell Lake area by E.W. Bazinet, Milner Consolidated Silver Mines and Iron Lake Minerals.

## General Geology

The northern half of the Meen–Dempster greenstone belt was described by Hollings, Stott and Wyman (2000) as a belt of supracrustal rocks ranging in age from circa 2842 Ma on its northern margin to <2740 Ma in the south. The supracrustal rocks of this area have been subdivided into 4 assemblages: the Kaminiskag assemblage (2842 Ma), the Meen assemblage (2825 Ma; Hollings, Stott and Wyman 2000), the Confederation assemblage (circa 2740 Ma), and the clastic metasedimentary rock-dominated Billett assemblage (<2740 Ma; Stott 1996).

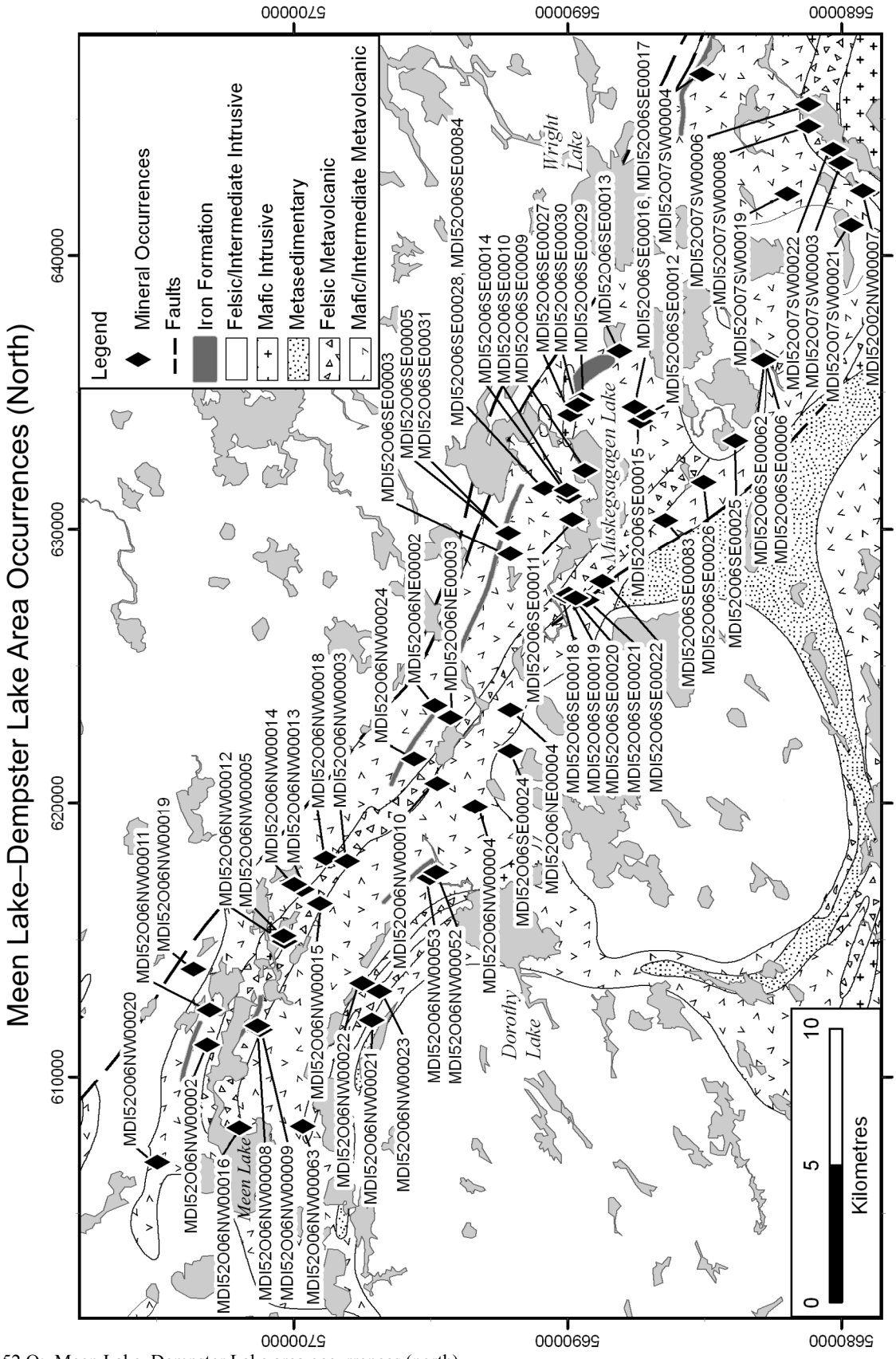
The Kaminiskag assemblage (formerly part of the Woman assemblage) is located on the northern margin of the belt and is dominated by massive to pillowed basalt. This mafic-dominated sequence also contains a minimum of 2 interflow banded iron formation horizons, as well as a number of thin units of dacitic to rhyolitic tuff or lapilli tuff (Hollings, Stott and Wyman 2000). The Meen assemblage, which overlies the Kaminiskag assemblage to the south, was described by Hollings, Stott and Wyman (2000) as a sequence of monolithic pyroclastic deposits that is largely dacitic in composition. The rocks of the Meen assemblage were subsequently overlain by rocks of the Confederation assemblage. Stott (1996) subdivided the Confederation assemblage rocks of this area into 2 bimodal volcanic cycles that are referred to as the Dempster (Cycle 1) and Bancroft (Cycle 2) cycles. The base of each of these volcanic cycles is dominated by massive to pillowed mafic metavolcanic flows, whereas the upper portions are dominated by dacitic pyroclastic rocks. The Confederation assemblage rocks were intruded by a number of mafic intrusions, including the Kawashe gabbro, Kawinogans gabbro and Dempster gabbro (Stott 1996). The Confederation assemblage rocks are unconformably overlain to the south by metasedimentary rocks of the Billett assemblage that is dominated by brownish-grey feldspathic wacke and shale (Stott 1996).

The northern margin of the Meen–Dempster greenstone belt is bounded to the north by granitoid rocks of the Dobie Lake pluton (2747 Ma), and to the west and southwest by the granitic Stoughton Creek pluton–Hammerton Lake pluton (2732 Ma) and Southern batholith (Stott 1996). The greenstone belt was also intruded by a number of late- to post-tectonic granitic intrusions, including the Obaskaka Lake pluton, Kawashe Lake stock, Graniteboss stock and Knupp Lake stock.

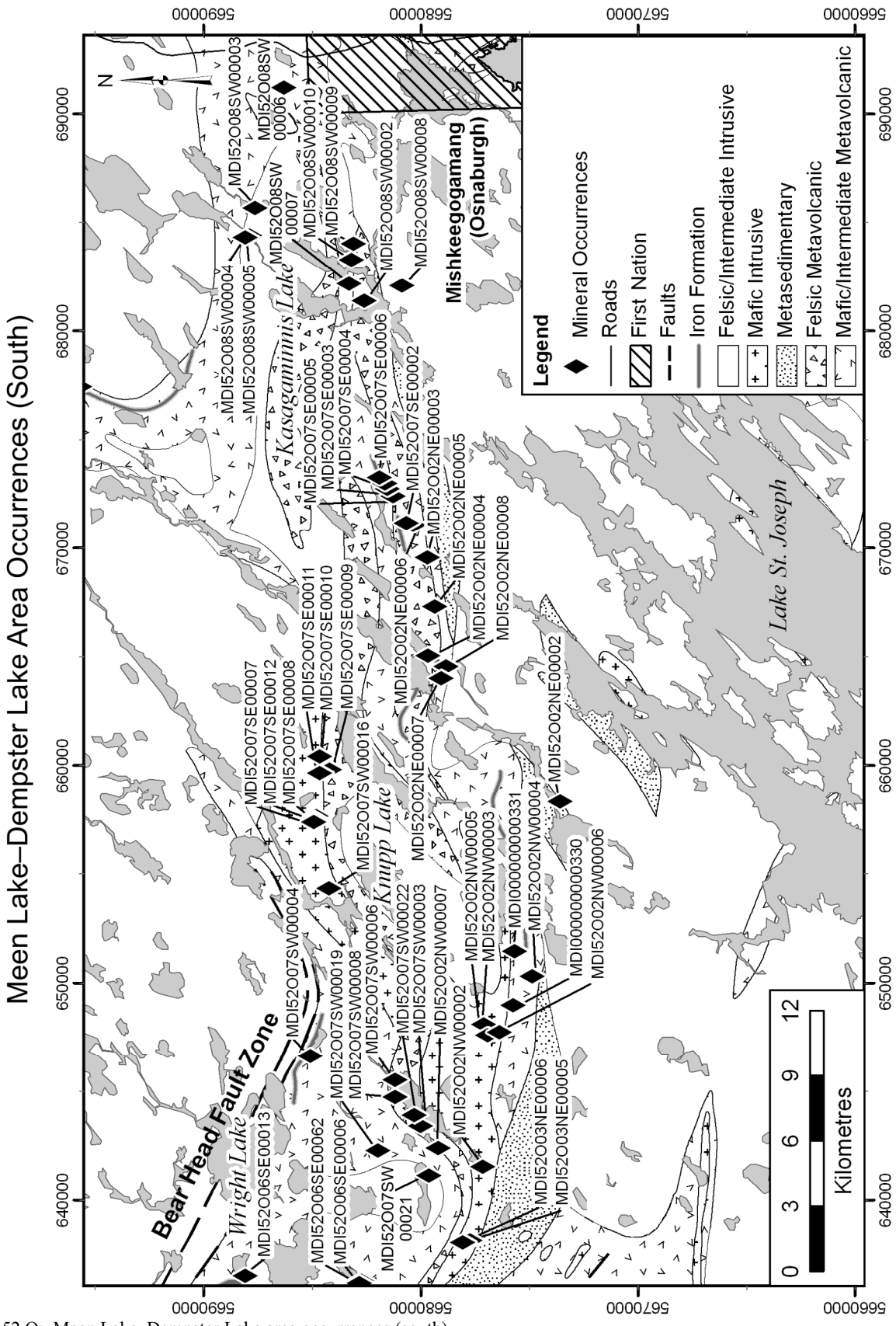
## Structural Geology

The most notable structural feature of the northern half of the Meen–Dempster greenstone belt is the Bear Head fault zone. This northwest-striking dextral transcurrent fault forms an approximately 1 km wide deformation zone that follows the northern margin of the belt (Stott 1996). This structure has a close spatial association with gold mineralization in the northern portion of the belt, including the past-producing Golden Patricia Mine.

Stratigraphy and foliation in this belt are generally subparallel, steeply northward-dipping, with strike directions ranging from approximately northwest in the western portion of the belt, east in the central portion, and east-northeast in the eastern portion. Hollings, Stott and Wyman (2000) indicated that this portion of the belt does not contain major fold structures, with folding limited to local asymmetric rotation.




NTS 52 O: Meen Lake–Dempster Lake area occurrences (north)




NTS 52 O: Meen Lake–Dempster Lake area occurrences (south)

## Deposit Geology

The following occurrences, prospects and mines have experienced exploration activity since 1993 or were not included in the compilation of Seim (1993).

## ANOMALY A (DUFFEL LAKE #4)

| | |
|---|---|
| *Location:* | UTM Zone 15, 647733E 5676393N<br>[occurrence 144 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NW00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

This occurrence was discovered during diamond drilling by Napoleon Exploration in 1988. The original occurrence was described by Seim (1993) as follows:

> Outcrop in the area around this occurrence is scarce. . . . the area is underlain by the Dempster Lake Gabbro in the west and by the Knupp Lake Stock to the east.
>
> The diamond-drilling and the geological mapping completed by the exploration companies indicate the area to be underlain by mafic-metavolcanic flows with metasedimentary interlayers including iron formation. These rocks are cut by felsic, often quartz and/or feldspar porphyritic, dykes. The presence of the Knupp Lake Stock in the east was confirmed with the 1988 diamond-drilling.
>
> In 1988, Napoleon Exploration Corporation tested 'Conductor N' of their Amoco Project with diamond-drill hole number 9. 'Conductor N' is an electromagnetic anomaly and coincident magnetic anomaly that trends east-southeast for a strike length of 1400 ft. The diamond-drill hole intersected a sequence of "Tuff-Exhalite chert zones, magnetite iron formation and mafic metavolcanics all of which are intruded by narrow feldspar porphyry dikes". The description in the diamond-drill log suggests that the "Tuff-Exhalite" may be an impure, banded, silicate iron formation and mafic metatuff. Three (3) intervals of the "Tuff-Exhalite" returned gold assay values high enough to be considered a gold occurrence (<1000 ppb Au). These intervals all contain bands and/or fracture filling of semi-massive to massive pyrite and pyrrhotite. Intervals with only pyrrhotite returned only anomalous assay values for gold.

Since 1988, considerable exploration activity has been carried out in this area by E.W. Bazinet, Milner Consolidated Silver Mines and Iron Lake Minerals. A diamond-drilling program carried out in 2000 by Iron Lake Minerals targeted the same geophysical anomaly that was drilled by Napoleon Exploration. A total of 8 diamond-drill holes (00-1, 00-2, 00-3 and 00-5 to 00-9) were advanced to test this zone, which was referred to by Bazinet (2000) as Anomaly A, over an approximate strike length of 900 m. Bazinet (2000) reported the presence of significant gold mineralization (i.e., >0.5 g/t Au) in 7 of these diamond-drill holes. The anomalous gold values are associated with bands of sulphidized oxide-facies iron formation that occur in a mafic to intermediate metavolcanic-dominated rock sequence. Bazinet (2000) also reported the presence of numerous narrow feldspar porphyry dikes throughout this zone.

Notable gold assay results reported by Bazinet (2000) from the Iron Lake Minerals diamond-drilling program include the following: 2.924 g/t Au over 0.65 m in DDH 00-01; 2.955 g/t Au over 0.55 m in DDH 00-02; 1.458 g/t Au over 1.61 m in DDH 00-03; 2.288 g/t Au over 1.52 m in DDH 00-05; 2.128 g/t Au over 1.16 m in DDH 00-06; 2.387 g/t Au over 0.77 m in DDH 00-08; and 1.383 g/t Au over 1.35 m in DDH 00-09.

## ANOMALY B

| | |
|---|---|
| *Location:* | UTM Zone 15, 648962E 5675752N<br>[occurrence 145 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000330 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

This occurrence is based on the reported occurrence of anomalous gold mineralization in Iron Lake Minerals diamond-drill hole 00-14 (Bazinet 2000). The drill hole was undertaken to test a geophysical anomaly referred to by Bazinet (2000) as Conductor B. Lithologies encountered during drilling were reported by Bazinet (2000) to have included a series of tuffs, basalt-andesite and sulphidized banded iron formation. The most significant gold value (3.116 g/t Au) was reported by Bazinet (2000) to occur in a 1.27 m long section logged as sulphidized, tuffaceous rock mineralized with arsenopyrite.

This occurrence is located approximately 500 m east-southeast of the Anomaly A prospect, and may represent a strike-extension of the same gold mineralized horizon.

## ANOMALY T

| | |
|---|---|
| *Location:* | UTM Zone 15, 651454E 5675679N<br>[occurrence 147 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000331 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

Bazinet (1995) reported assays of up to 0.04 ounce per ton gold in samples collected from a series of trenches excavated at this location over a strike length of approximately 200 m along an approximately east-striking magnetic anomaly (Anomaly T). The material exposed during this trenching was reported by Bazinet (1995) to consist of sheared rock consisting of bands of chert and amphibole (iron formation?). This rock was generally reported to be highly weathered, with abundant limonite staining. In trenches where sulphide mineralization was observed, Bazinet (1995) indicated the presence of disseminated to massive arsenopyrite.

Diamond drilling at this location by Iron Lake Minerals (DDH 00-15) was reported by Bazinet (2000) to have intersected a series of amphibolitized tuffs and possible exhalative sediments (chert) intruded by a feldspar porphyry dike. Anomalous gold assays (up to 0.498 g/t Au over 1.14 m) were reported from sections that encountered mineralization consisting of disseminated pyrrhotite with minor arsenopyrite. Lower gold assays were reported to have been obtained from sections that were only mineralized with pyrrhotite.

This occurrence is located approximately 3 km east-southeast of the Anomaly A prospect, and may represent an extension of the same mineralized horizon.

## BAZINET (DUFFEL LAKE #3)

| | |
|---|---|
| *Location:* | UTM Zone 15, 647598E 5676928N<br>[occurrence 142 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NW00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

The occurrence of gold mineralization at this location was first reported by Bazinet (1991). Seim (1993) described the geology and mineralization in the area of the occurrence as follows:

> Outcrop in the area around this occurrence is scarce. Stott and Wilson (1986b) [1986] indicate the area to be underlain by the Dempster Lake Gabbro in the west and by the Knupp Lake Stock to the east.
>
> The diamond-drilling and geological mapping completed by the exploration companies indicate the area to be underlain by mafic-metavolcanic flows with metasedimentary interlayers including iron formation. These rocks are cut by felsic, often quartz and/or feldspar, porphyritic, dykes. The presence of the Knupp Lake Stock in the east was confirmed with the 1988 diamond drilling.
>
> This mineral occurrence consists of several gold-bearing quartz veins hosted by mafic-metavolcanic rock. The veins are found in 3 outcrops; 2 outcrops are within 100 m of each other; the other is about 600 m to the northeast. In the outcrop to the northeast, a quartz vein trends east. This vein is up to 25 cm wide, with a strike length of less than 20 m. The vein contains pyrite and arsenopyrite. Grab samples of this vein have reported good gold values.
>
> In the two outcrops to the southwest, there are several north-trending veins and a couple of east-trending veins. Some of the veins contain pyrite and arsenopyrite. Grab samples from these veins report good gold values. . .
>
> Grab samples from the vein in the northeast outcrop have reported assay values of up to 0.972 ounce gold per ton. Grab samples from the veins in the southwest outcrops have reported assay values up to 0.237 ounce gold per ton.

Bazinet (2000) and Bazinet (2001) reported the results of 3 diamond-drill holes (00-10, 00-11 and 00-12) that were advanced to test this occurrence at depth. Bazinet (2000) described the gold mineralization as occurring in a quartz vein stockwork system hosted in medium-grained diorite or (more likely) massive basalt-andesite. Numerous significant gold assays were reported from each drill hole, with visible gold noted in DDH 00-12. Diamond-drill hole logs indicate the presence of disseminated sulphides, including pyrite, pyrrhotite and arsenopyrite, both in the quartz veins and in the adjacent wall rock. Finely disseminated magnetite was also reported to be present throughout the metavolcanic host rock. Bazinet (2000) noted that the gold mineralization may be associated with a magnetic anomaly that appears to be traceable over an east to west strike length of up to 3 km.

Notable gold assays reported by Bazinet (2001) include the following: 0.685 g/t Au over 2.17 m in DDH 00-10; 0.985 g/t Au over 2.32 m in DDH 00-11; and 0.666 g/t Au over 2.11 m and 18.138 g/t Au over 0.15 m in DDH 00-12.

## BAZINET #8 (DUFFEL LAKE #2)

| | |
|---|---|
| *Location:* | UTM Zone 15, 650293E 5674878N [occurrence 146 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

This occurrence was first documented in the 1980s by Noranda Exploration. Seim (1993) provided the following description of the occurrence:

> The Duffell Lake #2 mineral occurrence is a 12 cm- to 24 cm-wide quartz vein that is exposed in an outcrop, and at one time was probably exposed in a series of shallow trenches over a strike length of up to 30 m. The host rock to the vein is a pillowed metabasalt. The southern end of the vein, as exposed, trends northeast (~030°) and dips vertically. To the north, the vein turns to trend east-northeast (~070°). The vein is cut off to the north by a 1.5-2.5 m breccia zone that strikes 115° through the pillowed metabasalt. The vein contains up to 35 percent arsenopyrite masses in tension fractures and disseminated euhedral pyrite.
>
> About 50 m west-northwest of the quartz vein is an outcrop where a 1 m wide feldspar porphyry dyke intruded the metabasalt and the breccia zone. The feldspar-porphyry dyke contains quartz-filled tension fractures up to 60 cm in length and 15 cm wide. The dyke trends 090°.
>
> The breccia zone can be traced a further 50 m west-northwest to another outcrop. At the southern edge of this outcrop is a narrow (~45 cm) shear zone. A chip sample across the shear zone assayed 2810 ppb Au.

A number of additional assay results for samples collected by Noranda and MNDM from this occurrence were reported by Seim (1993). Notable results include 0.43 ounce per ton gold in a 0.6 m [2 feet] Noranda chip sample and 3690 ppb Au in a composite grab sample collected by MNDM staff.

Since 1993, considerable exploration has been carried out by E.W. Bazinet, Milner Consolidated Silver Mines and Iron Lake Minerals over a claim group that includes this occurrence.

## DUFFELL LAKE #6

| | |
|---|---|
| *Location:* | UTM Zone 15, 642378E 5679218N [occurrence 136 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NW) |
| *MNDM Township Area:* | Duffell Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NW00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

This gold occurrence was described by Youngman (1985) as an outcrop of feldspar porphyry containing quartz-tourmaline stringer veins. The geological compilation map included in Youngman (1985) also indicated the presence of chalcopyrite mineralization in the veins.

This occurrence was interpreted by Youngman (1985) to be one of a number of gold occurrences that are found within a well-foliated to sheared metadacite unit along a total strike length of 8.2 km. Other occurrences associated with this horizon include the North Dempster Lake gold occurrence to the northeast (MDI52O07SW00006), and the South Dunlop Lake occurrence (MDI52O03NE00005) to the

southwest. The foliation orientation in the sheared metadacite unit varies from northeast striking in the vicinity of Dempster Lake, to southeast striking in the Dunlop Lake area as it wraps around the southern margins of the Graniteboss stock. Foliation in the vicinity of the Duffell Lake #6 occurrence was indicated by Youngman to be oriented approximately 060/90. The variability in the foliation orientation is likely to be related to emplacement of the Graniteboss stock, which is a late-tectonic to posttectonic intrusion (circa 2700 Ma) (Stott 1996).

Mineralization in the area of this occurrence is likely to be related to a nearby major southeast-striking deformation zone that was identified by Stott and Wallace (1984) in the area between Billett and Teevin lakes.

The most notable assay value reported by Youngman (1985) from this occurrence was a grab sample result of 1680 ppb Au.

## GOLDEN PATRICIA MINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 629877E 5692270N [occurrence 111 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SE) |
| *MNDM Township Area:* | Kawashe Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06SE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

The geology of this deposit was described as follows by Seim (1993):

> The Golden Patricia mine produces gold from a quartz vein in a shear zone which cuts through a mafic metavolcanic succession. The vein averages a 40 cm thickness and is remarkably continuous over a strike length of more than 3.3 km. The vein and shear zone strike roughly east and dip steeply north, more or less concordant with the regional stratigraphy. Stott and Corfu (1991) suggest that the shear zone may be a splay of the Bear Head fault zone which is a boundary fault to the greenstone belt.
>
> The mafic metavolcanic succession which hosts the Golden Patricia vein and shear zone is comprised of tholeiitic flows with interflow beds of tuff, immature clastic sediments and iron formation. It is intruded by gabbroic intrusions, feldspar porphyry dikes and by late biotite-rich mafic dikes commonly identified as lamprophyres. The mafic metavolcanic succession is overturned.
>
> In addition to containing the Golden Patricia vein, the shear zone encompasses the remnants of feldspar porphyry intrusions on the footwall and hanging wall of the vein. These porphyries were mylonitized by the deformation. Originally, they were identified as felsic tuffs. The hanging wall is characterized by chlorite and biotite alteration which grades into the mafic metavolcanics. The footwall is characterized by silicification and sericitization and by a thin band of sulphidization (pyrrhotite) adjacent to the vein.
>
> The Golden Patricia vein is mineralized with fine-to-coarse visible gold which is commonly associated with pyrrhotite. Pyrite, chalcopyrite, sphalerite and galena are also observable in the vein. Generally, sulphides comprise less than 5% of the vein material. The quartz vein also contains tourmaline, carbonate, sericite, chlorite and rutile. The vein is not uniformly mineralized. Ore shoots defined by grade tend to rake about 70° east.
>
> The Golden Patricia vein exhibits $D_2$ folding along its length and is fractured and locally offset minor distances along the late $D_3$ plane which strikes almost perpendicular to the vein.

Operations at the Golden Patricia Mine ceased in March of 1997. Total production from this deposit between 1988 and 1997 was 619 796 ounces of gold (17 571 216 g Au) from 1 216 165 tonnes of milled ore (Mason et al. 1998). No reserve figures were reported at the time of closure.

## WRIGHT LAKE #8

| | |
|---|---|
| *Location:* | UTM Zone 15, 643893E 5680313N<br>[occurrence 138 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Soil Sample |
| *MDI Reference Number:* | MDI52O07SW00022 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Unknown assemblage |

This discretionary occurrence is based on a soil sample assay of 1980 ppb Au that was reported to have been obtained from this location by Youngman (1985). Youngman (1985) reported that the soil sample was collected immediately adjacent to an exposure of felsic porphyry hosted within sheared metadacite. The outcrop was reported to contain numerous limonite-stained quartz stringers (0.5 to 2 cm thick) that crosscut both the porphyry and dacite. Mineralization in the quartz veins includes tourmaline where they crosscut the dacite, and up to 3% pyrite where they crosscut the porphyry. Youngman (1985) also reported that this occurrence is located along strike with the North Dempster Lake occurrence (MDI52O07SW00006), located approximately 1200 m to the northeast.

## Occurrences and Prospects with Previously Described Deposit Geology

Geological descriptions of the following occurrences and prospects were provided in Seim (1993).

## B-ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 629880E 5692164N<br>[occurrence 112 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SE) |
| *MNDM Township Area:* | Kawashe Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06SE00031 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

## BEARDRUM LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 643398E 5680013N<br>[occurrence 137 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O07SW00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## BEN LAKE PROPERTY, ZONE #1

*Location:* UTM Zone 15, 672741E 5681563N
[occurrence 164 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00003
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## BEN LAKE PROPERTY, ZONE #2

*Location:* UTM Zone 15, 673009E 5681665N
[occurrence 165 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00004
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## BEN LAKE PROPERTY, ZONE #3

*Location:* UTM Zone 15, 672401E 5681274N
[occurrence 163 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00005
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## BEN LAKE PROPERTY, ZONE #7

*Location:* UTM Zone 15, 673272E 5681922N
[occurrence 166 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00006
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #6

*Location:* UTM Zone 15, 657664E 5684817N
[occurrence 150 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00007
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #7

*Location:* UTM Zone 15, 657506E 5684905N
[occurrence 151 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00008
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #8

*Location:* UTM Zone 15, 659835E 5684205N
[occurrence 154 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00009
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #9

*Location:* UTM Zone 15, 660441E 5684657N
[occurrence 155 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00010
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #10

*Location:* UTM Zone 15, 659666E 5684663N
[occurrence 153 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00011
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CALEY LAKE #11

*Location:* UTM Zone 15, 657389E 5684933N
[occurrence 152 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00012
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## CARPENTER LAKE

*Location:* UTM Zone 15, 658343E 5673589N
[occurrence 148 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/2 (NE)
*MNDM Township Area:* Matapesatakun Bay Area
*Commodities:* Mo
*Status:* Discretionary Occurrence
*Deposit Type:* Porphyry
*MDI Reference Number:* MDI52O02NE00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## COOPER ZONES

*Location:* UTM Zone 15, 616334E 5699037N
[occurrence 93 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Prospect
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00015
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen assemblage

## DEMPSTER SOUTHWEST

*Location:* UTM Zone 15, 641538E 5677148N
[occurrence 133 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/2 (NW)
*MNDM Township Area:* Duffell Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O02NW00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## DOBIE LAKE #1

*Location:* UTM Zone 15, 623565E 5694850N
[occurrence 103 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NE)
*MNDM Township Area:* Dobie Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NE00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## DOBIE ZONE

*Location:* UTM Zone 15, 623400E 5692095N
[occurrence 100 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NE)
*MNDM Township Area:* Dobie Lake Area
*Commodities:* Au
*Status:* Developed Prospect with Reserves
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NE00004
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## DRUM LAKE #2

*Location:* UTM Zone 15, 638063E 5678072N
[occurrence 131 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NE)
*MNDM Township Area:* Drum Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O03NE00006
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## DUFFELL LAKE #1

*Location:* UTM Zone 15, 648093E 5677118N
[occurrence 143 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/2 (NW)
*MNDM Township Area:* Duffell Lake Area
*Commodities:* Au
*Status:* Discretionary Occurrence
*Deposit Type:* Till Sample
*MDI Reference Number:* MDI52O02NW00003
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Unknown assemblage

## ESKER ZONE

*Location:* UTM Zone 15, 634196E 5689896N
[occurrence 118 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Prospect
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00027
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## HASAGA C

*Location:* UTM Zone 15, 671088E 5680364N
[occurrence 161 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/2 (NE)
*MNDM Township Area:* Matapesatakun Bay Area
*Commodities:* Au
*Status:* Developed Prospect with Reserves
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O02NE00006
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## JACKNIFE LAKE

*Location:* UTM Zone 15, 636184E 5682839N
[occurrence 130 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au, Fe
*Status:* Discretionary Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00006
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag–Confederation assemblages boundary

## JACKNIFE LAKE NORTH

*Location:* UTM Zone 15, 636296E 5682758N
[occurrence 129 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Ni, Cu
*Status:* Discretionary Occurrence
*Deposit Type:* Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE
*MDI Reference Number:* MDI52O06SE00062
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kawashe gabbro

## JORSCO

*Location:* UTM Zone 15, 611185E 5703165N
[occurrence 79 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KASAGAMINNIS LAKE

*Location:* UTM Zone 15, 682186E 5683313N
[occurrence 169 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Developed Prospect with Reserves
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00007
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## KAWASHE LAKE #4

*Location:* UTM Zone 15, 632157E 5689379N
[occurrence 117 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00009
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #5

*Location:* UTM Zone 15, 631443E 5690041N
[occurrence 116 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00010
*Subprovince/Belt/Assemblage:* Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #6

*Location:* UTM Zone 15, 630384E 5689828N
[occurrence 113 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00011
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #7

*Location:* UTM Zone 15, 634246E 5687239N
[occurrence 123 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00012
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #8

*Location:* UTM Zone 15, 636509E 5688103N
[occurrence 121 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00013
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #9

*Location:* UTM Zone 15, 631214E 5689942N
[occurrence 115 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00014
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #10

*Location:* UTM Zone 15, 633953E 5687355N
[occurrence 122 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00015
*Subprovince/Belt/Assemblage:* Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #11

*Location:* UTM Zone 15, 634471E 5687554N
[occurrence 124 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00016
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #12

*Location:* UTM Zone 15, 634417E 5687398N
[occurrence 125 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00017
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #13

*Location:* UTM Zone 15, 627629E 5689953N
[occurrence 105 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00018
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen assemblage

## KAWASHE LAKE #14

*Location:* UTM Zone 15, 627563E 5690080N
[occurrence 106 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00019
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen assemblage

## KAWASHE LAKE #15

*Location:* UTM Zone 15, 627484E 5689693N
[occurrence 107 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00020
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## KAWASHE LAKE #16

*Location:* UTM Zone 15, 627417E 5689289N
[occurrence 108 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00021
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## KAWASHE LAKE #17

*Location:* UTM Zone 15, 628089E 5688719N
[occurrence 109 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00022
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## KAWASHE LAKE #18

*Location:* UTM Zone 15, 630335E 5686427N
[occurrence 126 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Zn
*Status:* Discretionary Occurrence
*Deposit Type:* Till Sample
*MDI Reference Number:* MDI52O06SE00083
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Unknown assemblage

## KAWASHE LAKE #19

*Location:* UTM Zone 15, 621910E 5692090N
[occurrence 99 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Discretionary Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00024
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## KAWASHE LAKE #20

*Location:* UTM Zone 15, 633249E 5683875N
[occurrence 128 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Discretionary Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00025
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt /Kawashe gabbro

## KAWASHE LAKE #21

*Location:* UTM Zone 15, 631727E 5685041N
[occurrence 127 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Discretionary Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00026
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## KAWASHE LAKE #24

*Location:* UTM Zone 15, 634749E 5689478N
[occurrence 120 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00029
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWASHE LAKE #25

*Location:* UTM Zone 15, 634552E 5689627N
[occurrence 119 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00030
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## KAWINOGANS LAKE

*Location:* UTM Zone 15, 654353E 5684238N
[occurrence 149 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SW)
*MNDM Township Area:* Wright Lake Area
*Commodities:* Cu, Zn
*Status:* Occurrence
*Deposit Type:* Volcanogenic Massive Sulphide
*MDI Reference Number:* MDI52O07SW00016
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## KOROMOND #1

*Location:* UTM Zone 15, 615145E 5700370N
[occurrence 90 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00005
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen assemblage

## KOVAL-OHMAN

*Location:* UTM Zone 15, 671171E 5680674N
[occurrence 162 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SE)
*MNDM Township Area:* Caley Lake Area
*Commodities:* Au
*Status:* Developed Prospect with Reserves
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SE00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #1

*Location:* UTM Zone 15, 681397E 5682605N
[occurrence 168 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00002
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #2

*Location:* UTM Zone 15, 685676E 5687645N
[occurrence 174 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00003
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #3

*Location:* UTM Zone 15, 684415E 5687903N
[occurrence 172 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00004
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #4

*Location:* UTM Zone 15, 684322E 5688090N
[occurrence 173 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00005
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #5

*Location:* UTM Zone 15, 691231E 5686303N
[occurrence 175 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00006
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #7

*Location:* UTM Zone 15, 682098E 5680867N
[occurrence 167 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/8 (SW)
*MNDM Township Area:* Little Ochig Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O08SW00008
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## LITTLE OCHIG LAKE #8

| | |
|---|---|
| *Location:* | UTM Zone 15, 684037E 5683101N<br>[occurrence 171 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (SW) |
| *MNDM Township Area:* | Little Ochig Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08SW00009 |
| *Subprovince/Belt/Assemblage:* | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## LITTLE OCHIG LAKE #9

| | |
|---|---|
| *Location:* | UTM Zone 15, 683277E 5683198N<br>[occurrence 170 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (SW) |
| *MNDM Township Area:* | Little Ochig Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08SW00010 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MATAPESATAKUN BAY #1

| | |
|---|---|
| *Location:* | UTM Zone 15, 669563E 5679704N<br>[occurrence 160 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NE) |
| *MNDM Township Area:* | Matapesatakun Bay Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MATAPESATAKUN BAY #2

| | |
|---|---|
| *Location:* | UTM Zone 15, 665052E 5679689N<br>[occurrence 158 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NE) |
| *MNDM Township Area:* | Matapesatakun Bay Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NE00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MATAPESATAKUN BAY #3

| | |
|---|---|
| *Location:* | UTM Zone 15, 667318E 5679374N<br>[occurrence 159 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NE) |
| *MNDM Township Area:* | Matapesatakun Bay Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MATAPESATAKUN BAY #5

| | |
|---|---|
| *Location:* | UTM Zone 15, 664013E 5679074N<br>[occurrence 156 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NE) |
| *MNDM Township Area:* | Matapesatakun Bay Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MATAPESATAKUN BAY #6

| | |
|---|---|
| *Location:* | UTM Zone 15, 664563E 5678854N<br>[occurrence 157 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/2 (NE) |
| *MNDM Township Area:* | Matapesatakun Bay Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O02NE00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MEEN LAKE #2

| | |
|---|---|
| *Location:* | UTM Zone 15, 619887E 5693371N<br>[occurrence 98 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (NW) |
| *MNDM Township Area:* | Meen Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06NW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

## MEEN LAKE #4

*Location:* UTM Zone 15, 617475E 5694798N
[occurrence 97 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Zn, Cu
*Status:* Occurrence
*Deposit Type:* Volcanogenic Massive Sulphide
*MDI Reference Number:* MDI52O06NW00052
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## MEEN LAKE #5

*Location:* UTM Zone 15, 617276E 5695041N
[occurrence 96 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Zn
*Status:* Occurrence
*Deposit Type:* Volcanogenic Massive Sulphide
*MDI Reference Number:* MDI52O06NW00053
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## MEEN LAKE #6

*Location:* UTM Zone 15, 611727E 5701220N
[occurrence 84 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Unknown
*MDI Reference Number:* MDI52O06NW00008
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## MEEN LAKE #7

*Location:* UTM Zone 15, 611879E 5701316N
[occurrence 85 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00009
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## MEEN LAKE #8

*Location:* UTM Zone 15, 620725E 5694751N
[occurrence 101 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00010
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen–Confederation assemblages boundary

## MEEN LAKE #9

*Location:* UTM Zone 15, 612459E 5703060N
[occurrence 80 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00011
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #10

*Location:* UTM Zone 15, 614953E 5700334N
[occurrence 89 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00012
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Meen assemblage

## MEEN LAKE #11

*Location:* UTM Zone 15, 616841E 5699698N
[occurrence 92 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00013
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #12

*Location:* UTM Zone 15, 617028E 5699980N
[occurrence 91 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00014
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #13

*Location:* UTM Zone 15, 608139E 5701977N
[occurrence 82 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au, Cu
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00016
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #14

*Location:* UTM Zone 15, 608188E 5699660N
[occurrence 83 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Cu
*Status:* Occurrence
*Deposit Type:* Unknown
*MDI Reference Number:* MDI52O06NW00063
*Subprovince/Belt/Assemblage:* Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## MEEN LAKE #15

*Location:* UTM Zone 15, 617980E 5698820N
[occurrence 94 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00018
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #16

*Location:* UTM Zone 15, 613932E 5703649N
[occurrence 81 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00019
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #17

*Location:* UTM Zone 15, 606878E 5704979N
[occurrence 78 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00020
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #18

*Location:* UTM Zone 15, 612087E 5697149N
[occurrence 86 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00021
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## MEEN LAKE #19

*Location:* UTM Zone 15, 613432E 5697488N
[occurrence 88 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NW)
*MNDM Township Area:* Meen Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NW00022
*Subprovince/Belt/Assemblage:* Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## MEEN LAKE #20

| | |
|---|---|
| *Location:* | UTM Zone 15, 613137E 5696863N<br>[occurrence 87 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (NW) |
| *MNDM Township Area:* | Meen Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06NW00023 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## MOUSETRAP LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 641133E 5679638N<br>[occurrence 134 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O07SW00021 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Graniteboss stock |

## MUSKEGSAGAGEN LAKE WEST

| | |
|---|---|
| *Location:* | UTM Zone 15, 629113E 5692097N<br>[occurrence 110 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (SE) |
| *MNDM Township Area:* | Kawashe Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06SE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

## NORTH DEMPSTER LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 645523E 5681203N<br>[occurrence 140 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O07SW00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## PERKINS POND

*Location:* UTM Zone 15, 642278E 5681978N
[occurrence 135 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/7 (SW)
*MNDM Township Area:* Wright Lake Area
*Commodities:* Au, Cu, Zn
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O07SW00019
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Near Kaminiskag–Confederation assemblages boundary

## POWERLINE ZONE

*Location:* UTM Zone 15, 631520E 5690846N
[occurrence 114 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (SE)
*MNDM Township Area:* Kawashe Lake Area
*Commodities:* Au
*Status:* Prospect
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06SE00028, MDI52O06SE00084
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## SOUTH DUNLOP LAKE

*Location:* UTM Zone 15, 638138E 5677747N
[occurrence 132 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/3 (NE)
*MNDM Township Area:* Drum Lake Area
*Commodities:* Au
*Status:* Occurrence
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O03NE00005
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Confederation assemblage

## SPIKE ZONE

*Location:* UTM Zone 15, 623134E 5694283N
[occurrence 104 on Map 1 (back pocket)]
*NTS Map Area:* 52 O/6 (NE)
*MNDM Township Area:* Dobie Lake Area
*Commodities:* Au
*Status:* Prospect
*Deposit Type:* Lode Gold
*MDI Reference Number:* MDI52O06NE00003
*Subprovince/Belt/Assemblage*: Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage

## SUDBURY POINT

| | |
|---|---|
| *Location:* | UTM Zone 15, 644728E 5681203N<br>[occurrence 139 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O07SW00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Confederation assemblage |

## TONSIL LAKE

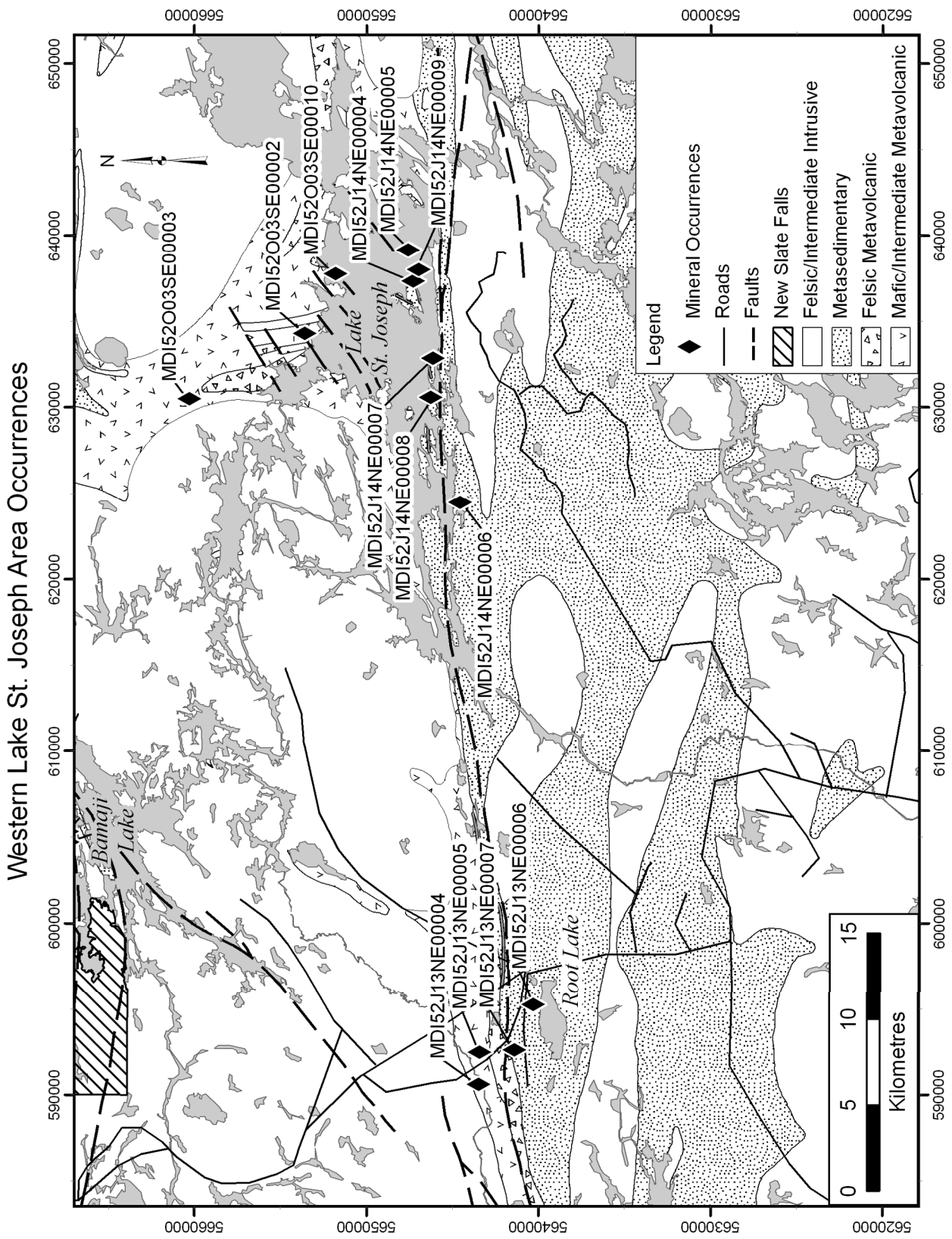
| | |
|---|---|
| *Location:* | UTM Zone 15, 621633E 5695607N<br>[occurrence 102 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (NW) |
| *MNDM Township Area:* | Meen Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06NW00024 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

## UMEX–DOROTHY LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 617883E 5698053N<br>[occurrence 95 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/6 (NW) |
| *MNDM Township Area:* | Meen Lake Area |
| *Commodities:* | Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O06NW00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |

## WRIGHT LAKE #4

| | |
|---|---|
| *Location:* | UTM Zone 15, 646633E 5685093N<br>[occurrence 141 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/7 (SW) |
| *MNDM Township Area:* | Wright Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O07SW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Meen–Dempster greenstone belt / Kaminiskag assemblage |




NTS 52 O and 52 J (northern portion): Western Lake St. Joseph area occurrences

# WESTERN LAKE ST. JOSEPH AREA OCCURRENCES

***Access***: Road access via forest access roads and water access via area waterways.

***Exploration History***: *1956–1957*: Geological and geophysical surveys and diamond drilling in the Root Lake area by Capital Lithium Mines and Consolidated Morrison Explorations. *1957–1960*: Geological and geophysical surveys, diamond drilling and advanced exploration activities including reserve estimates on an iron prospect on a number of islands in western Lake St. Joseph by Lake St. Joseph Iron. *1978*: Geophysical and geological surveys by Noranda on a gold property in the vicinity of Lake St. Joseph Island 17. *1984*: Sampling and assays by R. Rupert in the vicinity of Lake St. Joseph Island 17.

Additional information regarding the exploration history of additional occurrences was provided by Seim (1993).

## General Geology

The supracrustal rocks of the western Lake St. Joseph area were subdivided into 4 separate volcanic sequences (Cycles 1 to 4) assigned to the Confederation assemblage (2750 to 2730 Ma) and the St. Joseph assemblage (2723 to 2713 Ma) (Stott 1996). Each of these volcanic cycles has a mafic metavolcanic-dominated (massive and pillowed flows) base overlain by dacitic to rhyolitic pyroclastic rocks. In the Johnston Bay area, these volcanic sequences generally face east to northeast.

In the Eagle Island area, the metavolcanic rock assemblages are unconformably overlain by metasedimentary rocks of the Eagle Island assemblage (Stott 1996). This assemblage is a sequence of clastic and chemical sedimentary rocks that has been interpreted to have been deposited in a submarine fan environment. The base of the assemblage is composed of eroded dacitic pyroclastic material derived from the St. Joseph assemblage. This basal unit is overlain by a sequence that consists of arenite- and wacke-sandstone beds, interbeds of mudstone, conglomerate and banded magnetite iron formation (Stott 1996). A number of significant iron deposits have been outlined historically within the banded iron formations.

The supracrustal rocks are bounded to the north and west by the granitoid Bamaji–Blackstone batholith and to the east by the Carling pluton. A large gabbroic intrusion was also mapped within the greenstone belt to the east and southeast of Johnston Bay. Stott (1996) indicated this intrusion occurs between the rocks of Cycles 3 and 4. To the south, the supracrustal rocks are separated from the migmatitic rocks of the English River basins by the Lake St. Joseph fault zone. Rare metal pegmatites are known to occur at a number of locations near this fault zone (Breaks, Selway and Tindle 2003).

## Structural Geology

Mapping by Clifford (1969) indicated that stratigraphy and foliation in this area are generally subparallel with near-vertical dip. In the Johnston Bay area, east of the Bamaji–Blackstone batholith, stratigraphy and foliation generally strike north to northwest. Further to the west, on the southern margins of the Bamaji–Blackstone batholith, stratigraphy and foliation strike approximately east.

Mapping by Stott, Kay and Sanborn (1987a) indicated the presence of several northeast- to east-northeast-striking faults in the Johnson Bay area. However, the most prominent structural feature of the western Lake St. Joseph area is the Sydney Lake–Lake St. Joseph fault zone. Stott (1996) indicated that this is a regional-scale, steeply dipping dextral transcurrent fault zone that marks the boundary between the Uchi domain and English River basins. The fault zone is typically 1 to 2 km wide and extends from Lake Winnipeg in the west to Pashkokogan Lake in the east, where it merges with the Miniss River and Pashkokogan Lake–Kenoji Lake faults, which crosscut the English River basins.

Stott (1996) also indicated geochronological data indicate that the rocks of Cycle 3 (similar in age to the Confederation assemblage) are older than those of the apparently underlying Cycle 2 (similar in age to the St. Joseph assemblage), implying repetition of Cycles 1 and 2 as Cycles 3 and 4 by fault imbrication.

## Deposit Geology

The following occurrences, prospects and mines have experienced exploration activity since 1993 or were not included in the compilation of Seim (1993).

## EAGLE (84) ISLAND, FISH (164) ISLAND AND WOLF (175) ISLAND

| | |
|---|---|
| *Locations:* | Eagle (84) Island: UTM Zone 15, 637362E 5647295N<br>Fish (164) Island: UTM Zone 15, 632863E 5646157N<br>Wolf (175) Island: UTM Zone 15, 630595E 5646285N<br>[occurrences 183, 182 and 181, respectively, on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/14 (NE) |
| *MNDM Township Area:* | Dawson Lake Area |
| *Commodities:* | Fe |
| *Status:* | 3 Developed Prospects with Reserves |
| *Deposit Type:* | Algoma-Type Iron Formation |
| *MDI Reference Numbers:* | Eagle Island: MDI52J14NE00004<br>Fish Island: MDI52J14NE00007<br>Wolf Island: MDI52J14NE00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Eagle Island assemblage |

The banded iron formation of western Lake St. Joseph is hosted within metasedimentary rocks of the Eagle Island assemblage. Shklanka (1968) indicated that this iron formation extends for an easterly strike length of approximately 10.5 km, and attains widths of up to 152 m. The iron formation was described by Clifford (1969) as consisting of alternating laminae of magnetite-rich and quartz-rich material. The iron formation was also reported to contain lesser amounts of biotite, chlorite, epidote, hematite and carbonate. At the far western end of the iron formation, where the metamorphic grade is highest, amphibole and garnet have also been noted.

Clifford (1969) indicated the iron formation was intensely folded, with one major synclinal structure having been identified. Clifford (1968) showed the closure of the main syncline to be located along the eastern shore of Eagle Island, with the northern and southern limbs of the structure forming the northern and southern shorelines of the island (i.e., the axial plane generally strikes east). The two limbs of this structure have been mapped to the west across Fish Island, Wolf Island and Island 184.

Clifford (1969, p.54) reported the following reserve estimates for the Eagle, Fish and Wolf Island deposits:

- Eagle Island: 127.0 to 228.6 million tonnes [125–225 million tons] of iron ore grading 35% iron
- Fish Island: 76.2 to 101.6 million tonnes [75–100 million tons] of iron ore grading 37% iron
- Wolf Island: 15.24 million tonnes [15 million tons] of iron ore grading 35% iron.

## ISLAND 17

| | |
|---|---|
| *Location:* | UTM Zone 15, 638034E 5646973N<br>[occurrence 184 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/14 (NE) |
| *MNDM Township Area:* | Trist Lake Area |
| *Commodities:* | Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52J14NE00009 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

This occurrence is based on the reported presence of anomalous gold and silver mineralization within sulphide-facies (possibly sulphidized) iron formation at the northwestern end of Lake St. Joseph Island 17 (Berger 1977).

Berger (1977) indicated that the Island 17 area is underlain by a complex assemblage of volcanic and sedimentary rocks. The northwestern portion of the island was mapped by Berger (1977) as consisting of a mixture of sulphide- and oxide-facies iron formation. The iron formation sequence was described as consisting largely of graphitic argillite, chert and intra-formational chert breccia with 5 to 20% pyrite in stringers and pods randomly distributed parallel to foliation. The central portion of the island was mapped as felsic metavolcanic rock, whereas the southeastern portion was indicated to be underlain by intermediate volcanic rock. The interpreted stratigraphic contacts strike approximately northeast. A significant north-striking shear zone was also indicated to be located immediately to the west of Island 17.

An assay of 0.32 ounce per ton gold and 0.28 ounce per ton silver was reported from a grab sample of sulphide-facies iron formation mineralized with minor pyrrhotite, arsenopyrite and ankerite (Berger 1977). Two grab samples (LSJ 008 and LSJ 009) collected in the same area by Rupert (1984) were reported to have assayed 0.076 and 0.042 ounce per ton gold, respectively. A third sample (LSJ 011) collected by Rupert (1984), but not assayed, was indicated to possibly contain visible gold.

## ISLAND 34

| | |
|---|---|
| *Location:* | UTM Zone 15, 639169E 5647590N<br>[occurrence 185 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/14 (NE) |
| *MNDM Township Area:* | Trist Lake Area |
| *Commodities:* | Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Vein |
| *MDI Reference Number:* | MDI52J14NE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

Bruce (1923) reported a silver assay of 2.08 ounces per ton silver from a chip sample collected across a series of quartz veins located on the northwest side of Lake St. Joseph Island 34. The combined width of the veins was reported to be approximately 1.2 m over a total zone width of 6.1 m. Mapping by Clifford (1969) suggested that this occurrence is located near a northwest-striking metasedimentary–metavolcanic rock contact.

## LAKE ST. JOSEPH

| | |
|---|---|
| *Location:* | UTM Zone 15, 624490E 5644556N<br>[occurrence 180 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/14 (NE) |
| *MNDM Township Area:* | Trist Lake Area |
| *Commodities:* | Be |
| *Status:* | Occurrence |
| *Deposit Type:* | Pegmatite |
| *MDI Reference Number:* | MDI52J14NE00006 |
| *Subprovince/Belt/Assemblage*: | English River / / |

Bruce (1923) reported the presence of beryl in a pegmatite intrusion found at this location. Clifford (1969) indicated this is one of many pegmatites that occur toward the western end of Lake St. Joseph. Clifford (1969) described the pegmatites as small, irregular-shaped (i.e., folded) bodies that contain abundant coarse-grained potassium feldspar (up to 30 cm) and muscovite, with lesser amounts of plagioclase and tourmaline. These intrusions are hosted within metasedimentary rocks of the English River basins immediately south of the Sydney Lake–Lake St. Joseph fault zone.

## ROOT LAKE PEGMATITE GROUP: McCOMBE, CONSOLIDATED MORRISON, CAPITAL LITHIUM MINES 5 CLAIM GROUP AND CAPITAL LITHIUM MINES 34 CLAIM GROUP

| | | |
|---|---|---|
| *Locations:* | McCombe: | UTM Zone 15, 590613E 5643482N |
| | Consolidated Morrison: | UTM Zone 15, 592485E 5643433N |
| | Capital Lithium Mines 5 Claim Group: | UTM Zone 15, 592605E 5641393N |
| | Capital Lithium Mines 34 Claim Group: | UTM Zone 15, 595255E 5640294N |
| | [occurrences 176, 177, 178 and 179, respectively, on Map 1 (back pocket)] | |
| *NTS Map Area:* | 52 J/13 (NE) | |
| *MNDM Township Area:* | Root Lake Area | |
| *Commodities:* | Li, Ta, Be, Nb | |
| *Status:* | 1 Developed Prospect with Reserves, 3 Occurrences | |
| *Deposit Type:* | Pegmatite | |
| *MDI Reference Numbers:* | McCombe: | MDI52J13NE00004 |
| | Consolidated Morrison: | MDI52J13NE00005 |
| | Capital Lithium Mines 5 Claim Group: | MDI52J13NE00006 |
| | Capital Lithium Mines 34 Claim Group: | MDI52J13NE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi domain–English River basins boundary zone | |

The Root Lake pegmatite group consists of 4 spodumene pegmatites within a 3 by 4 km area (Breaks, Selway and Tindle 2003). Two of these occurrences (McCombe and Consolidated Morrison) are hosted in mafic metavolcanic rocks of the Uchi domain, whereas the other 2 (Capital Lithium Mines occurrences) are hosted in metasedimentary rocks of the English River basins.

The most significant of these occurrences is the McCombe prospect, which consists of 2 pegmatite dikes that have been traced for an easterly strike length of 550 m (Breaks, Selway and Tindle 2003). These pegmatites exhibit internal zoning, are highly evolved, and were classified as complex-type, spodumene-subtype by Breaks, Selway and Tindle (2003). A detailed discussion of the mineralogy of these pegmatites was provided by Breaks, Selway and Tindle (2003).

Mulligan (1965) reported that a 1956 diamond-drilling program on the McCombe prospect by Capital Lithium Mines outlined a 2 333 752 tonne (2 297 000 ton) deposit grading 1.3% $Li_2O$. Breaks, Selway and Tindle (2003) reported tantalum assays of up to 380 ppm Ta from 24 bulk rock samples collected from across the 2 dikes.

The Consolidated Morrison occurrence, located approximately 2 km southeast of the McCombe dikes (Breaks, Selway and Tindle 2003), was reported by Mulligan (1965) to be a 9 m wide pegmatite dike traced for a strike length of approximately 30 m. Breaks, Selway and Tindle (2003) indicated this is a muscovite-tourmaline-spodumene pegmatite containing spessartine, manganocolumbite, calcium-bearing, iron-rich elbaite and rare schorl. It represents one of several pegmatites drilled by Consolidated Morrison over a strike length of approximately 1 km (Break, Selway and Tindle 2003). Breaks, Selway and Tindle (2003) reported anomalous Li, Cs, Be and Rb assays from an aplite dike located near the western end of this zone (UTM Zone 15, 591763E 5643280N). A reconnaissance sampling program carried out approximately 1500 m west of the original Consolidated Morrison occurrence and reported by Hinz et al. (2000) also identified anomalous Li, Cs, Be, and Ta concentrations in samples collected from 2 narrow (0.3 to 0.6 m wide) 075-striking pegmatite dikes.

Blackburn et al. (1999) reported that the Capital Lithium Mines occurrences are based on reported diamond-drill intersections of white, muscovite-bearing pegmatites containing abundant tourmaline during a 1957 exploration program. The “34 claim group” occurrence is based on reports of beryl crystals (up to 3 mm) in 2 diamond-drill holes, whereas the “5 claim group” occurrence is based on reports of spodumene in a single drill hole. Reconnaissance sampling of surface exposures of a number of pegmatites in the area of the Capital Lithium Mines occurrences that was reported by Hinz et al. (2000) did not report any significant assay results.

## Occurrences and Prospects with Previously Described Deposit Geology

Geological descriptions of the following occurrences were provided in Seim (1993)

### ISLAND 81

| | |
|---|---|
| *Location:* | UTM Zone 15, 637788E 5651819N<br>[occurrence 186 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (SE) |
| *MNDM Township Area:* | Johnston Bay Area |
| *Commodities:* | Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03SE00010 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / St. Joseph assemblage |

### KITTY CREEK

| | |
|---|---|
| *Location:* | UTM Zone 15, 630508E 5660297N<br>[occurrence 188 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (SE) |
| *MNDM Township Area:* | Johnston Bay Area |
| *Commodities:* | Ag, Cu, Zn |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03SE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

### MILE FIVE

| | |
|---|---|
| *Location:* | UTM Zone 15, 634313E 5653607N<br>[occurrence 187 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/3 (SE) |
| *MNDM Township Area:* | Johnston Bay Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O03SE00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

# SOULES BAY–PASHKOKOGAN LAKE AREA OCCURRENCES

***Access***: Road and water access via Highway 599 and area waterways or air access from Pickle Lake or Sioux Lookout.

***Exploration History***: *1956–1969*: Geological and geophysical surveys, diamond drilling and advanced exploration activities including shaft sinking, reserve estimates and metallurgical testing on the Soules Bay iron prospect by Sanjo Iron Mines and Steep Rock Iron Mines. *Mid-1950s to 1960*: Geological and geophysical surveys, diamond drilling and advanced exploration activities including reserve estimates and metallurgical testing on the Belcher–Doran iron prospect by Oglebay Norton Company and Little Long Lac Gold Mines. *1980*: Geological and geophysical surveys by Placer Development in the East Pashkokogan Lake area.

## General Geology

Goodwin (1965a) indicated that the supracrustal rocks of the Pashkokogan Lake–eastern Lake St. Joseph area consist of a lower, metasedimentary rock-dominated sequence in the south that is overlain by a metavolcanic rock-dominated sequence that contains several thin intercalated metasedimentary layers. Stott (1996) indicated that the metavolcanic-dominated sequence forms part of the St. Joseph assemblage (2723 to 2713 Ma); the metasedimentary-dominated unit is referred to as the Soules Bay metasedimentary sequence. Stott (1996) indicated that the age relationship between the metavolcanic and metasedimentary sequences is currently unclear, although metasedimentary rock appears to structurally underlie the metavolcanic rock.

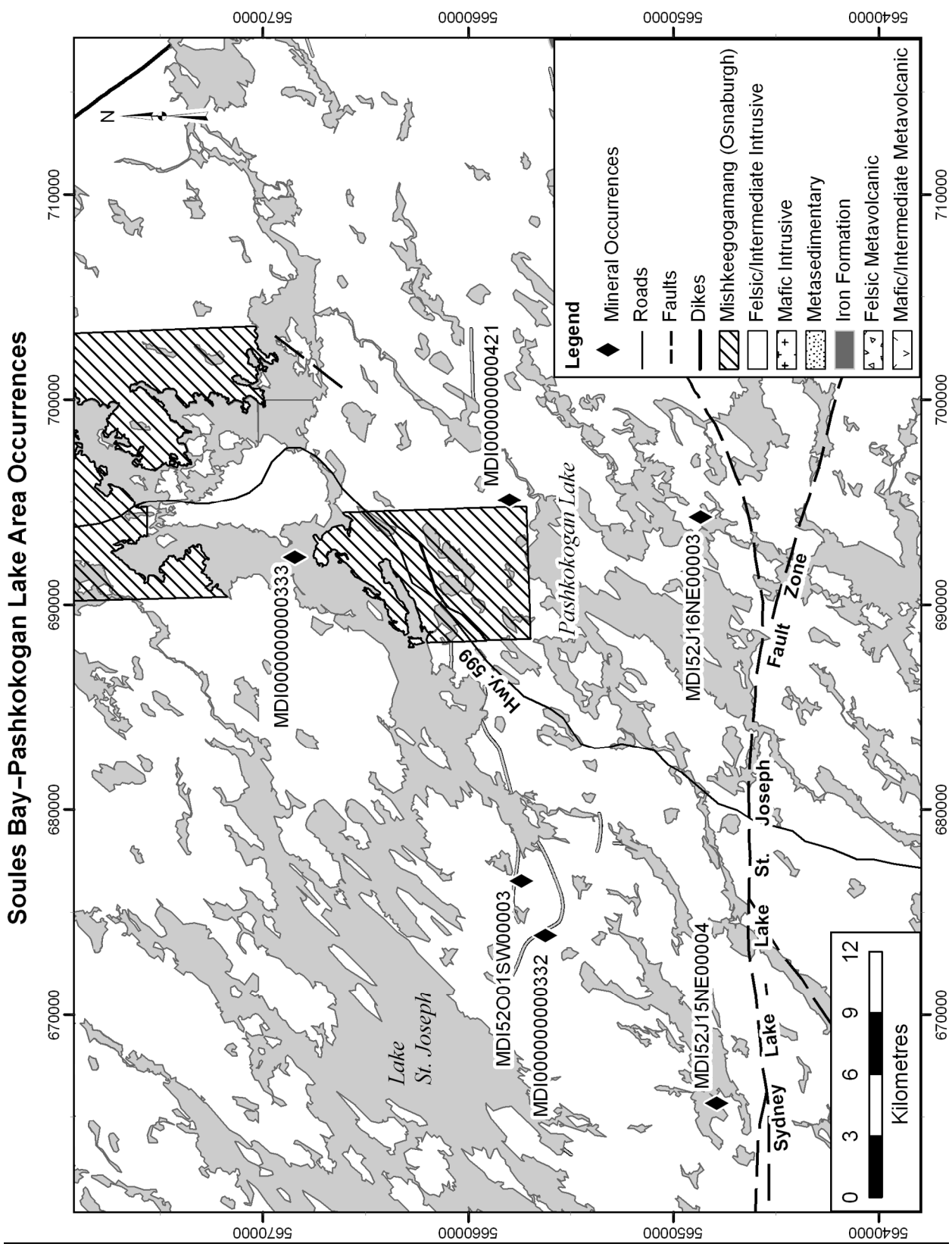
Stott (1996) indicated that the metavolcanic-dominated rock sequence consists of a basaltic base overlain by a considerable thickness of intermediate pyroclastic rock. The intermediate pyroclastic rock forms an upward progression towards the north from dacitic, lithic tuff breccia to vesicular tuff breccia to an increasingly mafic-rich dacitic to andesitic or basaltic lapilli tuff. The coarsest deposits are found north and northeast of Soules Bay. Stott (1996) reported that the metasedimentary rocks of the Soules Bay sequence consist of staurolite-bearing, and locally andalusite-bearing, wacke–pelite couplets interbedded with magnetite iron formation.

Stott (1996) reported the presence of a number of mafic intrusions (sills and/or substratiform dikes) located within the supracrustal rock sequences of the eastern Lake St. Joseph area. These include 2 intrusions with peridotitic margins in the Pedlarpath Bay area and long tabular sheets of gabbro that intrude the margin of the Soules Bay metasedimentary sequence.

A number of syntectonic to posttectonic felsic intrusions were mapped within and adjacent to the boundaries of the greenstone belt by Stott, Kay and Sanborn (1987b). These include the Doran Lake stock, Riach Lake stock, Osnaburgh pluton, Twiname stock, and the Caron Lake pluton. The Twiname and Caron Lake intrusions are notable in that they have been classified as posttectonic peraluminous granites.

## Structural Geology

Mapping of the eastern Lake St. Joseph area by Goodwin (1965a, 1965b, 1965c, 1965d) and Stott, Kay and Sanborn (1987b) indicated that stratigraphic layering and foliations in the supracrustal rocks are generally subparallel. The strike and dip of foliation varies throughout the area, with the most common strike direction being north-northeast, and with generally steep to moderate southerly dips in the northern half of the belt and steep to moderate northerly dips in the southern half of the belt. As is typical in Archean greenstone belts, the strike of foliation tends to wrap around the margins of internal and external plutons.




NTS 52 O and 52 J (northern portion): Soules Bay–Pashkokogan Lake area occurrences

A significant anticline structure has been mapped in the Soules Bay metasedimentary sequence. Stott (1996) indicated that this structure is a northwest-verging, overturned fold. Stott, Kay and Sanborn (1987b) also noted the probable presence of a large fold further to the southeast, in the Pashkokogan Lake area. Goodwin (1965a, 1965b) mapped an east-northeast-trending syncline that crosses the central portion of East Pashkokogan Lake, and a parallel anticline at the south end of the same lake.

The southern boundary of the Lake St. Joseph greenstone belt is marked by the east-striking Sydney Lake–Lake St. Joseph fault zone. Stott (1996) indicated that this is a regional-scale, steeply dipping dextral transcurrent fault zone that marks the boundary between the Uchi domain and English River basins. The fault zone is typically 1 to 2 km wide and extends from Lake Winnipeg in the west to Pashkokogan Lake in the east, where it merges with the Miniss River and Pashkokogan Lake–Kenoji Lake faults, which crosscut the English River basins.

## Deposit Geology

The geology of each of the individual deposits is described below.

## BELCHER–DORAN

| | |
|---|---|
| *Location:* | UTM Zone 15, 665691E 5647909N<br>[occurrence 189 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/15 (NE) |
| *MNDM Township Area:* | Doran Lake Area |
| *Commodities:* | Fe |
| *Status:* | Developed prospect with Reserves |
| *Deposit Type:* | Algoma-Type Iron Formation |
| *MDI Reference Number:* | MDI52J15NE00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Soules Bay Sequence |

The Belcher–Doran deposit is located within an east-trending band of metasedimentary rocks located south of the granitic Doran Lake stock and to the north of a band of granite gneiss and migmatite (Goodwin 1965c). The metasedimentary sequence consists of impure quartzite, pebble conglomerate, arkose, greywacke, shale, tuff, and extensive bands of iron formation.

The iron formation was described by Goodwin (1965a) as a thinly banded rock composed of alternating layers of magnetite, quartz and metasedimentary schist. The main iron formation zone is approximately 4.5 km long, striking east (with a steep southerly dip) across the west half of Doran Lake. This iron formation ranges in thickness from 91 to 396 m, with an average width of 183 m. A second iron formation zone approximately 760 m long and 61 to 91 m wide occurs at the north shore of Doran Lake. This zone strikes approximately 110 with a steep southerly dip.

Goodwin (1965a) reported that a deposit (both iron formation zones combined) containing 381 675 000 tonnes (375 664 000 tons) of iron formation averaging 19.2% magnetic iron has been delineated at this location.

## EAST LAKE ST. JOSEPH PEGMATITE

| | |
|---|---|
| *Location:* | UTM Zone 15, 692310E 5668455N<br>[occurrence 194 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/1 (NE) |
| *MNDM Township Area:* | Osnaburgh Lake Area |
| *Commodities:* | Nb |
| *Status:* | Occurrence |
| *Deposit Type:* | Pegmatite |
| *MDI Reference Number:* | MDI000000000333 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / St. Joseph assemblage |

This occurrence is based on the reported presence of the niobium-bearing mineral ferrocolumbite in a pegmatite dike located on an island in the eastern portion of Lake St. Joseph near Osnaburgh House (Breaks, Selway and Tindle 2003). The pegmatite was described as an extensively sheared and boudinaged, 3 to 5 m wide dike of white pegmatite hosted by metawacke. The pegmatite was further described by Breaks, Selway and Tindle (2003) as consisting of coarse-grained, green muscovite-rich potassic pegmatite gradational into quartz-rich patches with blocky potassium feldspar and white aplite containing garnet.

Breaks, Selway and Tindle (2003) indicated that this pegmatite may be genetically related to the nearby pegmatitic granite Caron Lake pluton.

## EAST PASHKOKOGAN LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 694255E 5648686N<br>[occurrence 192 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 J/16 (NE) |
| *MNDM Township Area:* | Greenbush Lake Area |
| *Commodities:* | Li, Be, Nb, Ta |
| *Status:* | Occurrence |
| *Deposit Type:* | Pegmatite |
| *MDI Reference Number:* | MDI52J16NE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / St. Joseph assemblage |

The East Pashkokogan Lake spodumene pegmatite was described by Breaks, Selway and Tindle (2003) as an intrusion that consists of alternating layers of spodumene and aplite and stringers of tourmaline. The exposure of this intrusion is found on the northeast shore of the southeast bay of Pashkokogan Lake, and covers an area approximately 10 m wide and 12 m long (Kay and Stott 1985). The layers were mapped in detail by Kay and Stott (1985) and strike approximately northeast. Kay and Stott (1985) also identified 3 smaller pegmatite dikes in the immediate vicinity of the main intrusion. Kowalczyk (1980) indicated that the pegmatite intrudes felsic volcanic breccia.

The spodumene zones contain abundant coarse-grained (up to 2.5 cm) green and white spodumene that is often altered to a waxy dark green mineral (Breaks, Selway and Tindle 2003). The spodumene zones also contain abundant potassium feldspar, albite and quartz. Accessory minerals found in this zone are reported to include dark green to black tourmaline, silver and green muscovite, zircon, tantalum-tin oxides, montebrasite, fluorapatite, and cesium-rich beryl. The aplite zones are reported to contain fine-grained tourmaline and fluorapatite.

Breaks, Selway and Tindle (2003) reported the presence of 3 additional pegmatite dikes in close proximity to the spodumene pegmatite. Both intrusions are hosted by metasedimentary rocks.

The first dike is located approximately 1 km to the south of the East Pashkokogan Lake pegmatite, in the southeastern portion of east Pashkokogan Lake (UTM Zone 15, 693245E 5648182N). This intrusion is described as a 3 to 4 m wide dike comprising potassium feldspar, plagioclase, quartz and minor green muscovite. Accessory minerals identified in this dike include ferrocolumbite and ferrotantalite.

The second dike is located approximately 500 m from the East Pashkokogan Lake pegmatite (at UTM Zone 15, 693445E 5648332N). It is reported to consist of quartz, white potassium feldspar and minor blue fluorapatite, with green muscovite along fractures. Biotite muscovite granite and aplite are also reported to occur in the vicinity of the pegmatite. The aplite contains tourmaline that is zoned with elbaite cores and schorl rims. The schorl is reported to be rich in lithium (Breaks, Selway and Tindle 2003).

Goodwin (1965a) reported a $LiO_2$ assay value of 1.25% from a chip sample collected across the width of the spodumene pegmatite. Low assay values for beryllium (0.03% Be), cesium (0.03% Cs) and rubidium (0.15% Rb) were also reported. Grab samples collected by Kay and Stott (1985) are reported to have assayed up to 0.71% $LiO_2$. Kowalczyk (1980) reported a tantalum assay of 0.01% Ta from a grab sample collected for Placer Development.

## LAKE ST. JOSEPH NORTH ZONE AND SOUTH ZONE DEPOSITS

| | |
|---|---|
| *Locations:* | North Zone: UTM Zone 15, 676517E 5657419N<br>South Zone: UTM Zone 15, 673885E 5656250N<br>[occurrences 191 and 190, respectively, on Map 1 (back pocket)] |
| *NTS Map Areas:* | North Zone: 52 O/1 (SW)<br>South Zone: 52 O/2 (SE) |
| *MNDM Township Areas:* | North Zone: Riach Lake Area<br>South Zone: Carling Island Area |
| *Commodities:* | Fe |
| *Status:* | 2 Developed Prospects with Reserves |
| *Deposit Type:* | Algoma-Type Iron Formation |
| *MDI Reference Numbers:* | North Zone: MDI52O01SW00003<br>South Zone: MDI000000000332 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph greenstone belt / Soules Bay Sequence |

The Lake St. Joseph iron prospect consists of 2 low-grade magnetite iron formation deposits (North and South zones) hosted within a clastic metasedimentary rock-dominated sequence (Goodwin 1965a). The metasedimentary sequence is reported to consist of a variety of lithologies ranging from conglomerate to argillite, and is intercalated with metavolcanic tuff and amphibolite units. The iron formations were reported by Goodwin (1965a) to be closely associated with argillaceous schist units that occur near the upper (northern) contact of the metasedimentary sequence with an overlying metavolcanic rock-dominated assemblage.

The iron formation was described by Goodwin (1965a) as banded iron formation consisting of alternating 1 to 25 cm thick layers of black magnetite-rich material, white quartz-rich layers, and grey, green or brown silicate-rich (clastic sediment-dominated) layers. The richest zones in each iron formation (i.e., with highest concentration of magnetite layers) are reported to occur near the northern contacts of each deposit.

Goodwin (1965a) reported that the rocks of this area lie on the north limb of an east-northeast-trending, and east-northeast-plunging (35 to 60°) anticline. This limb of the structure is overturned, with

bedding generally reported to dip between 60 to 80° toward the south. Smaller scale complex folding of the iron formation was also reported by Goodwin (1965a), with numerous reversals in younging direction noted in various portions of the deposits.

Goodwin (1965a) reported the North zone deposit has a strike length of approximately 3.23 km, and has a width that ranges from 150 to 360 m. Diamond drilling is reported to have indicated that the deposit is continuous to a minimum depth of 150 m. The strike direction varies from approximately 075 at the east end of the deposit to 105 at the west end; the dip varies from 55 to 80° toward the south. Sage and Breaks (1982) reported a reserve estimate of 348 105 000 tonnes grading 23.78% Fe for the North zone (to a depth of 122 m), with an additional 66 103 000 tonnes of ore having an unknown grade estimated to the 213 m level.

The South zone deposit, which may represent a folded repetition of the same iron formation (Goodwin 1965a), is located approximately 2.5 km to the southwest of the North zone. This deposit was reported by Goodwin (1965a) to have a minimum strike length of 3.65 km, and ranges in width from approximately 100 to 245 m. The deposit strikes approximately 075 at its eastern end and 110 at the west end and dips toward the south at angles ranging from 60 to 80°. Goodwin (1965a) reported diamond drilling outlined the South zone deposit to a depth between 90 and 150 m. Sage and Breaks (1982) reported a reserve estimate of 280 030 000 tonnes grading 22.19% Fe for this zone.

## PASHKOKOGAN RIVER

| | |
|---|---|
| *Location:* | UTM Zone 15, 695100E 5658000N<br>[occurrence 193 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/1 (SE) |
| *MNDM Township Area:* | Caron Lake Area |
| *Commodities:* | Ni, Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic and Ultramafic Volcanic/Intrusion-Associated Deposit |
| *MDI Reference Number:* | MDI000000000421 |
| *Subprovince/Belt/Assemblage*: | Uchi / Lake St. Joseph assemblage / St. Joseph assemblage |

This occurrence is reported by Kerr Addison Mines Ltd. (1988) to be exposed in surface trenches approximately 1.5 km north of the mouth of the Pashkokogan River. The occurrence is found in a small gabbroic body that is mineralized with 2 to 3% chalcopyrite, pentlandite, pyrite and pyrrhotite.

Kerr Addison Mines Ltd. (1988) reported that Falconbridge Nickel Mines also intersected this occurrence in 4 diamond-drill holes that were drilled to test an approximately 250 m long structure represented by coincident magnetic and electromagnetic anomalies. The diamond-drill holes are reported by Kerr Addison Mines Ltd. (1988) to have intersected a mineralized zone in metagabbro that contained 0.3% Cu and 0.3% Ni over a width of up to 18 m. However, the Falconbridge diamond-drill hole logs filed for assessment (AFRI# 52O01SE0008) do not include these assay results. The drill-hole logs indicate that the mineralized zone consists of disseminated, stringer and blebby sulphides (pyrrhotite, pentlandite and chalcopyrite). The reported sulphide concentrations in the mineralized zones vary (trace to 40% with some massive zones a few centimetres wide), with typical sulphide concentrations being in the range of 5 to 10%.

In a news release dated April 21, 2004, Bell Resources Corporation reported that the results of an airborne electromagnetic and magnetic survey indicated that the strength of a conductive body associated with the occurrence lies at least 75 m below the ground surface. Diamond drilling was planned to test this geophysical target at depths between 100 and 125 m. However, no results from this drilling program were filed for assessment.

# SAM'S LAKE AREA OCCURRENCES

***Access***: Access to the area is obtained via Thierry Mine Road to Kapkichi Lake, followed by water access via Kapkichi Lake and Kawinogans River.

***Exploration History***: *1971*: Airborne and ground geophysical surveys by Umex. *1988–1989*: Ground geophysical and geological surveys and diamond drilling by Bond Gold Canada Inc..

## General Geology

Bond Gold Canada (1990) indicated this area southwest of Kapkichi Lake consists of a narrow (northeast-trending) band of supracrustal rocks of the Pickle Lake greenstone belt that are bounded to the northwest by the Dobie Lake pluton and to the southeast by the Pickle Lake stock. The immediate area of the occurrences was mapped and limited outcrop exposure was noted (Bond Gold Canada 1989). Lithologies identified during this mapping included metasediment and granodiorite. The metasedimentary rock stratigraphy was noted as 280/70–85. A geophysical interpretation map (AFRI# 52O08NW0008) subsequently prepared by Bond Gold Canada indicated that the occurrences are located adjacent to the contact between granodiorite and a thin unit of mafic metavolcanic rock.

## Structural Geology

Bond Gold Canada (1990) indicated that the geological structures of the area include shearing and folding that was likely attributable to the effects of the emplacement of felsic intrusive rocks on both sides of the narrow supracrustal sequence. Bond Gold Canada (1990) also interpreted the existence of north-northeast-striking faults based on the interpretation of airborne magnetic data.

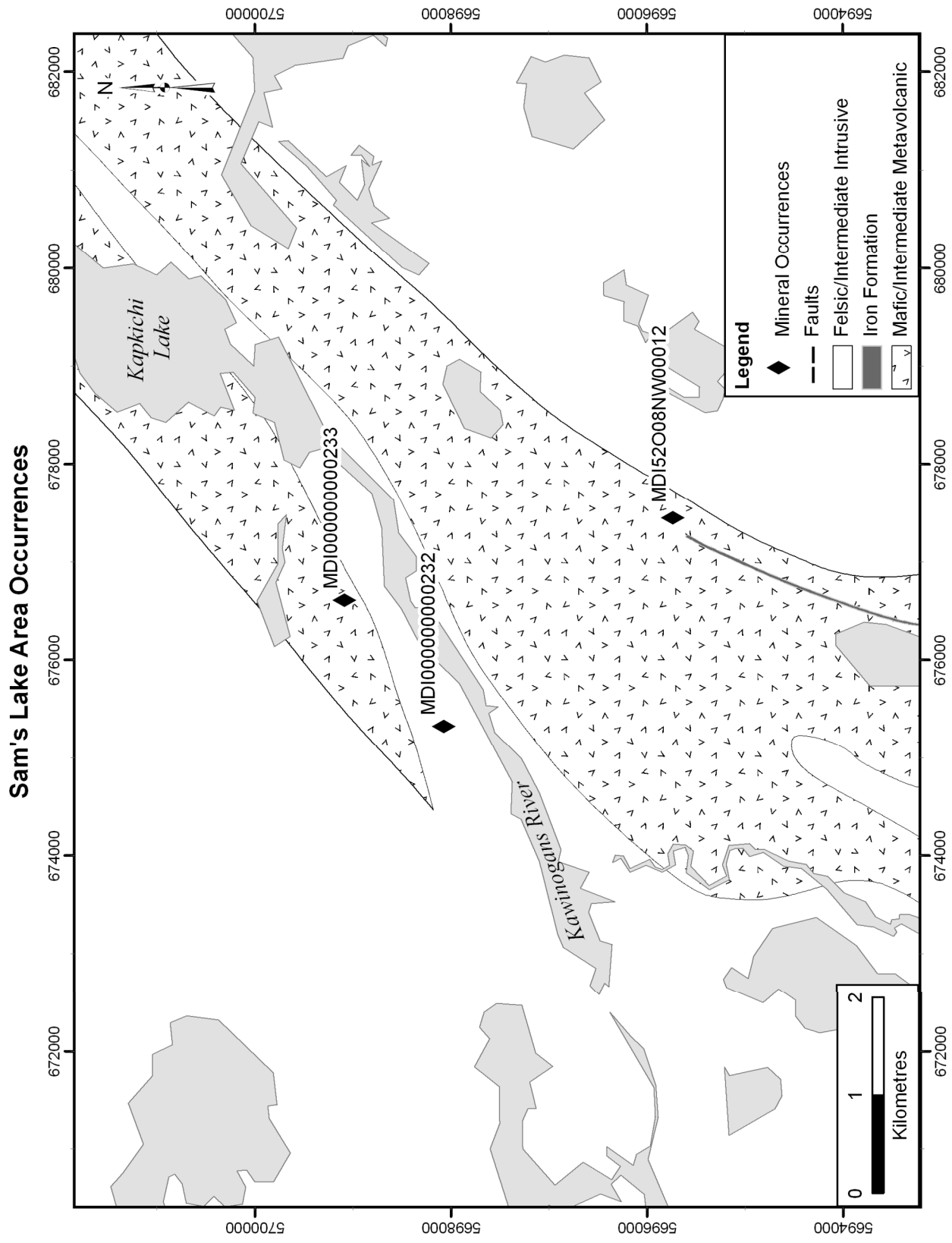
## Deposit Geology

The geology of each of the individual deposits is described below.

### JKP89-05

| | |
|---|---|
| *Location:* | UTM Zone 15, 675321E 5698070N<br>[occurrence 196 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI000000000232 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The diamond-drill hole log prepared by Bond Gold Canada for DDH JKP89-05 (AFRI# 52O08NW0008) indicates this occurrence is hosted within a body of massive sulphide (an approximately 6 m drill section) that occurs within felsic intrusive rocks logged as epidotized granite and quartz feldspar pegmatite. The massive sulphides are approximately 1 m from the contact between the granitic intrusive rock and material logged as a sulphidized amphibolitic flow. The massive sulphide unit is indicated to consist of approximately 80% pyrrhotite, 15% pyrite and 2% chalcopyrite. The massive sulphides are also indicated to contain several quartz-feldspar veins and inclusions of sheared amphibolite. The most notable reported assays include 13 360 ppm Cu over 0.6 m and 3090 ppm Ni over 0.8 m from separate sections of DDH JKP89-05. Approximately 125 m to the west, an assay of 5790 ppm Cu was reported from a 0.6 m section of massive sulphide hosted within amphibolite and located within 1 m of a contact with a granitic intrusion (AFRI# 52O08NW0008).




NTS 52 O: Sam's Lake area occurrences

## JKP89-09

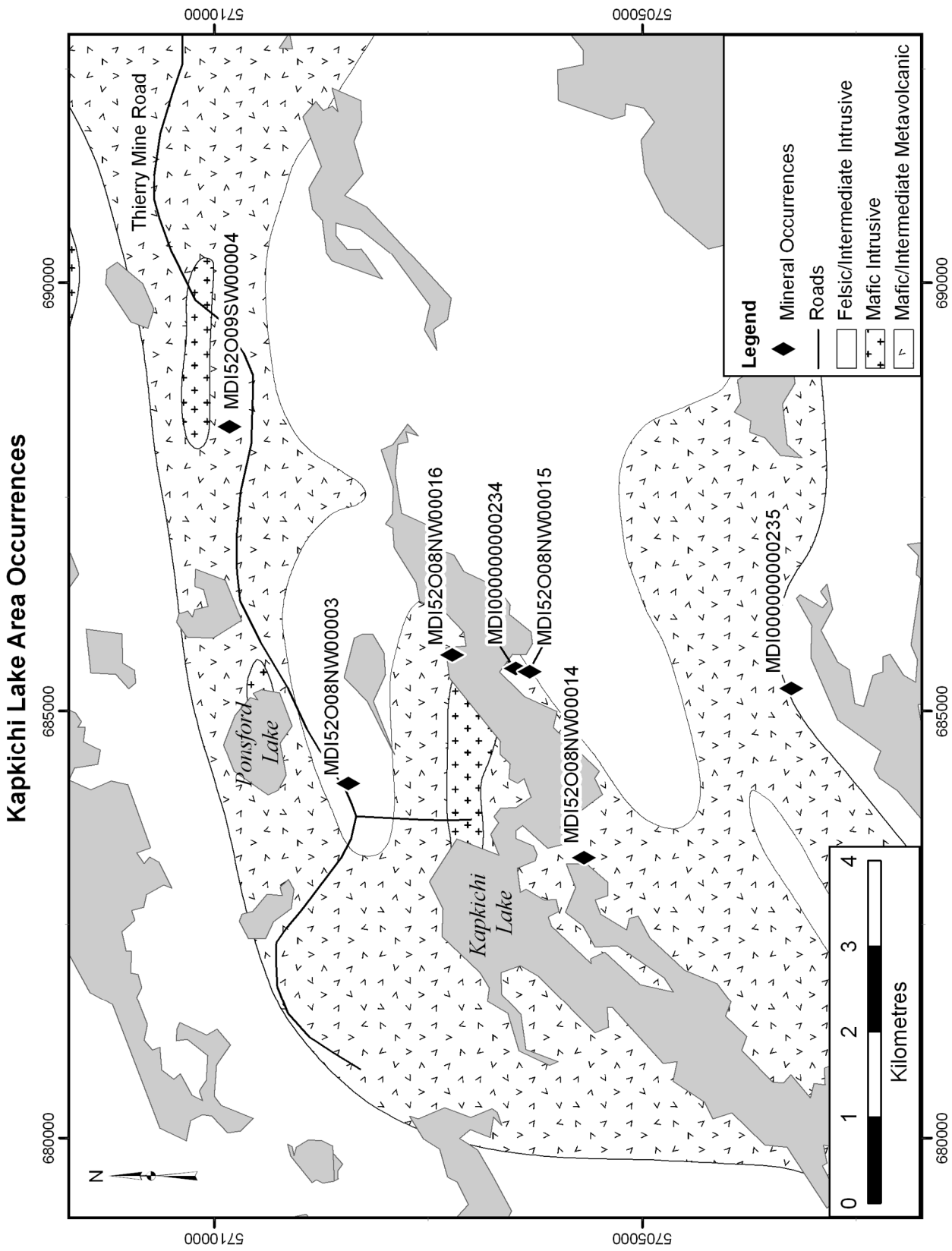
| | |
|---|---|
| *Location:* | UTM Zone 15, 676610E 5699085N<br>[occurrence 197 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI000000000233 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The diamond-drill hole log prepared by Bond Gold Canada for DDH JKP89-09 (AFRI# 52O08NW0008) indicates that this occurrence is hosted within an approximately 12.5 m wide drill section logged as sulphidized biotite quartz schist. This material occurs within a granodiorite intrusion and contains quartz veining and felsic dikes. Sulphides occur as thin laminae along foliation planes, as fracture and vein fillings (1 to 10 mm wide), as breccia fillings and as massive pods. The sulphide minerals were identified as pyrrhotite (3 to 5%), pyrite (2 to 3%) and chalcopyrite (1 to 2%). The most notable reported assay was 14 100 ppm Cu over 0.7 m (AFRI# 52O08NW0008).

## TRANSTERRE

| | |
|---|---|
| *Location:* | UTM Zone 15, 677448E 5695732N<br>[occurrence 195 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Mo |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number:* | MDI52O08NW00012 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This discretionary occurrence is based on the reported occurrence of chalcopyrite and molybdenite in quartz veins hosted in mafic metavolcanic rocks.




NTS 52 O: Kapkichi Lake area occurrences

# KAPKICHI LAKE AREA OCCURRENCES

***Access***: Access to the area is obtained via the Thierry Mine Road which connects to Highway 599.

***Exploration History***: *1928*: Gold mineralized vein discovered on south shore of Kapkichi Lake by Gunnar Berg. *1946–1950*: Trenching, ground magnetic survey and diamond drilling by Central Patricia Gold Mines. *1956–1958*: Geophysical surveys and diamond drilling by Kapkichi Nickel Mines. *1969–1976*: Geophysical surveys, diamond drilling, delineation of Thierry and K1-1 deposits, sinking of exploration shaft on Thierry deposit by Umex. *1976–1982*: Production from Thierry deposit by Umex from 2 open pits and underground workings. *2002*: Diamond drilling of Thierry deposit by PGM Ventures. *2004 to Present*: Mineral resource estimates and diamond drilling by Richview Resources.

## General Geology

The Kapkichi Lake area copper-nickel-PGE deposits are located within a narrow east-trending belt of metavolcanic rock consisting predominantly of pillowed mafic flows, with minor amounts of felsic to intermediate metavolcanic and metasedimentary rocks (Patterson and Watkinson 1984). Regional metamorphism converted the mafic metavolcanic rock of the area to amphibolite, whereas the intermediate to felsic metavolcanic rocks (interpreted to be tuffs) were converted to biotite-plagioclase schist (Patterson 1980). Metasedimentary rocks occur as narrow units conformable with the tuffaceous metavolcanic rock, and are dominated by calc-silicate rock with minor pelitic and graphitic horizons (Patterson 1980). The supracrustal rocks were intruded by a series of tabular mafic to ultramafic intrusions consisting of gabbro, peridotite and dunite. These intrusions host copper-nickel-PGE mineralization, with the most notable example being the Thierry Mine deposit. Stott (1996) suggested that these mafic to ultramafic intrusions are likely to be synvolcanic sills. The metavolcanic rock is wedged between granitic rocks of the Williams Lake batholith to the north and the Pickle Lake stock to the south (Stott 1996). The Williams Lake batholith, in turn, was intruded by the dioritic Kibler Lake stock (Sage and Breaks 1982). The mafic metavolcanic sequence that hosts the mineralized intrusions was classified by Young (2003) as being part of the Pickle Crow assemblage (>2860 Ma).

## Structural Geology

The ultramafic rock in the Kapkichi Lake area that hosts copper-nickel mineralization is located adjacent to a shear or mylonite zone having an approximate orientation of 240/50 (Patterson and Watkinson 1984). Conjugate faults oriented 025/55 and 270/45 were also reported by Patterson and Watkinson (1984). Several faults oriented approximately 030/50 were also mapped in the Kapkichi Lake area by Patterson (1980).

Cameron (1980) interpreted structural features in the Thierry Mine area as representing 4 separate episodes of deformation. The first deformation event ($D_1$) is represented by compositional layering ($S_1$) within the amphibole schist that forms the hanging wall and footwall of the ore deposit. This deformation event is interpreted to have transposed compositional layering to an orientation approximately parallel to foliation. The $S_1$ fabric was also indicated by Cameron (1980) to be oriented approximately parallel to the Thierry orebody, which was reported to have an orientation that ranges between 240–250/45–55. The second deformation event ($D_2$) was interpreted by Cameron (1980) to have resulted in the development of folds with an axial planar cleavage ($S_2$) having an orientation ranging from approximately 251/54 in the hanging-wall amphibolite schist and 248/46 in the footwall amphibolite schist. Patterson (1980) interpreted the presence of an axial planar fabric oriented approximately 248/68 based on structural measurements taken at locations away from the mine site. The fold axes were reported by Cameron (1980) to be approximately parallel to a well-developed mineral lineation in the amphibolite schist. The orientation of this lineation was reported by Cameron (1980) to vary significantly between the hanging-wall and footwall amphibolite schist, with reported average orientations of 358/47 and 293/36. This

discrepancy was interpreted to have been caused during a later rotational deformation event. A third deformation event ($D_3$) is represented by kink bands that affect the $S_2$ fabric (Cameron 1980). Patterson (1980) also suggested that a broad bend in the $D_2$ folds. The final interpreted ($D_4$) deformation event was reported by Cameron (1980) to be represented by splay faults in the orebody and the rotation of the $S_2$ fabric described above.

Stott (1996) interpreted that the deformation and related remobilization and concentration of sulphide minerals observed in the Thierry deposit was likely related to the emplacement of the Pickle Lake stock (2740 Ma).

## Deposit Geology

The geology of each of the individual deposits is described below.

## GUNNAR BERG

| | |
|---|---|
| *Location:* | UTM Zone 15, 685500E 5706480N [occurrence 201 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Au, Cu |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000234 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Gunnar Berg occurrence was described by Thomson (1946) as consisting of 2 small gold-bearing quartz veins with intervening ladder veinlets exposed on the south shore of Kapkichi Lake on claim PA 7788 or PA 7789. Central Patricia Mines (1949) later indicated the presence of a mineralized vein drilled on claim PA 7789. The veins were reported by Thomson (1946) to strike northeast, with the southernmost vein dipping to the southeast. Subsequent drilling by Central Patricia Gold Mines in 1946 reportedly encountered significant chalcopyrite mineralization (up to 2% Cu), but little gold. However, one assay of 0.45 ounce per ton gold was reported from this drilling program (Thomson 1946).

## KAPKICHI CENTRAL PATRICIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 685460E 5706316N [occurrence 200 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Developed Prospect without Reserves |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O08NW00015 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This deposit was described by Sage and Breaks (1982) as a small lensoidal, predominantly ultramafic body (with local gabbroic phases) having dimensions of 580 by 210 m. This intrusion is hosted within amphibolitized mafic metavolcanic rock. Mineralization occurs in the gabbroic phase portion of the intrusion (dimensions of 580 by 90 m) and consists of disseminated chalcopyrite, pyrite and nickeliferous pyrrhotite. Sage and Breaks (1982) reported that a representative core section through the deposit averaged 0.50% Cu and 0.25% Ni over 30 m.

## THIERRY MINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 684148E 5708433N<br>[occurrence 203 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Ni, PGE |
| *Status:* | Past-Producing Mine with Reserves |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O08NW00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Between 1976 and 1982, the Thierry Mine produced 480.1 million pounds of copper, 15.2 million pounds of nickel, 17 500 ounces of platinum, 47 000 ounces of palladium, and 17 000 ounces of gold from 5.8 million tons of processed ore (as posted on Richview Resources Web site, March 2009). As of September 14, 2006, Richview Resources reported the following mineral resource estimates (NI 43-101 compliant): Measured and Indicated: 5 570 000 tonnes grading 1.80% Cu, 0.19% Ni, 5.67 g/t Ag, 0.08 g/t Au, 0.13 g/t Pt and 0.28 g/t Pd; and Inferred: 3 403 000 tonnes grading 1.60% Cu and 0.18% Ni, 6.10 g/t Ag, 0.12 g/t Au, 0.14 g/t Pt and 0.39 g/t Pd.

The known deposit covers an approximate strike length of 1800 m and extends to a depth of approximately 900 m below surface (as posted on Richview Resources Web site, September 2006).

The mafic and ultramafic rocks that host the Thierry deposit were indicated by Patterson and Watkinson (1984) to include metagabbro (75%), mafic metagabbro (20%) and talc-carbonate schist (5%). These rocks are crosscut by a shear zone (phyllonitic mylonite) that consists of chlorite-biotite schist. This shear zone pinches and swells, ranging in width from 2 to 100 m. The shear zone is typically widest where it crosscuts the mafic to ultramafic intrusive rocks that host the orebody, whereas the adjacent amphibolite schist generally only shows minor deformation (Patterson and Watkinson 1984).

Rocks in the Kapkichi Lake area were metamorphosed to middle amphibolite grade prior to shear zone formation (Patterson and Watkinson 1984). However, the characteristics of the shear zone (high iron chlorite in mylonite matrix) are interpreted to indicate that greenschist-facies conditions existed during the deformation event that contributed to the concentration of ore minerals.

The ore was subdivided into 4 types referred to by Patterson and Watkinson (1984) as breccia ore (40%), mylonite ore (58%), bornite ore (1%) and disseminated sulphides (1%). Breccia ore contains 20 to 50% sulphides consisting of angular fragments of gangue in a matrix of chalcopyrite, pyrrhotite, pyrite and pentlandite. Mylonite ore contains 5 to 20% of stringer chalcopyrite, pyrrhotite, pentlandite and pyrite that has been sheared parallel to foliation. Bornite ore comprises 1 to 5% stringers and dissemination of chalcopyrite and bornite in carbonate veins associated with blocks of amphibolite schist. The disseminated ore occurs as metamorphosed primary magmatic sulphides occurring as composite blebs of chalcopyrite, pyrrhotite and pentlandite. Patterson and Watkinson (1984) interpreted the sulphides in this orebody to be of primary magmatic origin. However, much of the mylonite and breccia ore was mobilized during deformation. This mobilization may explain the relatively high copper–nickel ratios (Cu:Ni) found in this deposit, as copper is more mobile than nickel and may have become concentrated in the vicinity of the shear zone during deformation. Intrusive copper-nickel deposits typically have a Cu:Ni of 2:1, whereas the Thierry deposit has a ratio of 8:1 (Patterson and Watkinson 1984).

## UMEX K1-1

| | |
|---|---|
| *Location:* | UTM Zone 15, 688324E 5709823N [occurrence 204 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SW) |
| *MNDM Township Area:* | Ponsford Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O09SW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Patterson (1980) reported that, based on the results of a 100 hole diamond-drilling program, Umex outlined an ore deposit at this location containing 73 million tons grading 0.39% Cu and 0.11% Ni.

This deposit is hosted in an approximately east-striking, lensoid body of metamorphosed intrusion consisting of gabbro (25%), mafic gabbro (25%) and biotite hornblende schist (50%). Sage and Breaks (1982, *see* Figure 13) indicated the intrusion has a strike length of approximately 2700 m. Rare pods of peridotite and talc-carbonated schist were reported to be associated with the mafic gabbro (Patterson 1980). The northern contact of the intrusion is fault bounded, whereas the southern contact has been interpreted to be conformable with the adjacent mafic metavolcanic rock (amphibolite schist). The ultramafic rock of the intrusion, as reported by Patterson (1980), were altered to biotite-chlorite schist in zones up to 50 m wide adjacent to contacts with amphibolite fault zones and crosscutting dikes.

HBT Agra (1993) reported that a portion of the K1-1 orebody was developed by Umex as an open pit covering an area of 2.5 ha, and having a maximum depth of 35 m. The ore was processed at the nearby Thierry Mine. However, no production totals are provided.

## UMEX G (KAPKICHI LAKE B)

| | |
|---|---|
| *Location:* | UTM Zone 15, 683282E 5705680N [occurrence 199 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O08NW00014 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Sage and Breaks (1982) reported that copper-nickel mineralization at this location occurred in an ultramafic raft (580 by 60 m) enclosed by a small granitic stock. Patterson (1980) indicated that this intrusion consists of altered gabbro (80%), altered peridotite (10%), minor altered dunite and an oxide-rich layer (10%). Mineralization within this intrusion was reported by Patterson (1980) to consist of primary disseminated sulphide, metamorphosed disseminated sulphide and oxide-layer sulphides. The sulphide content of the intrusion locally exceeds 5%, with the primary and metamorphosed disseminated sulphides consisting primarily of chalcopyrite and pyrrhotite with exsolved pentlandite. The sulphides are also indicated to be intergrown with magnetite and ilmenite (Patterson 1980). Oxide-layer (ilmenomagnetite, ilmenite and gahnite) sulphides include chalcopyrite, bornite, pyrite and cobalt-rich pentlandite. The most favourable assay from this deposit, obtained during diamond drilling by Kapkichi Nickel Mines in 1956, was reported to have averaged 1.31% Cu and 0.14% Ni over 6.1 m (Sage and Breaks 1982). Mason et al. (2001) indicated that this deposit contains reserves totalling 7.5 million tons grading 0.41% Cu and 0.10% Ni.

## UMEX J&I (UMEX KAPKICHI)

| | |
|---|---|
| *Location:* | UTM Zone 15, 685659E 5707220N<br>[occurrence 202 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Mafic/Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52O08NW00016 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Sage and Breaks (1982) reported this deposit consists of several lenticular bodies of peridotite and gabbro hosted within amphibolite (likely mafic metavolcanic rock). Patterson (1980) further classified the intrusions as consisting of gabbro (80%), peridotite (10%), dunite (5%) and olivine gabbro (5%). The largest intrusion was reported by Sage and Breaks (1982) to have dimensions of approximately 600 by 300 m, and is approximately 240 m thick. The reported grade of this intrusion is 0.45% Cu and 0.12% Ni (Sage and Breaks 1982). Mineralization was reported by Patterson (1980) to consist of primary disseminated sulphide, metamorphosed disseminated sulphide, breccia sulphides and oxidized sulphides. The sulphide content of the intrusion locally exceeds 5%, with the mineralization consisting primarily of chalcopyrite and pyrrhotite with exsolved pentlandite. The sulphides are also indicated to be intergrown with magnetite and ilmenite (Patterson 1980). Breccia sulphides occur as narrow zones of sulphide containing angular rock fragments. Oxidized sulphides occur in close proximity to faults and near the top of the intrusions. Mason et al. (2001) reported that the Kapkichi J deposit hosts reserves totalling 37 million tonnes grading 0.40% Cu and 0.12% Ni.

## Geology and Occurrences of the Wimbabika Lake Area (Near Kapkichi Lake)

***Access***: Access to the area is obtained via the Thierry Mine Road to Kapkichi Lake followed by water access via Kapkichi Lake.

***Exploration History***: *1928*: Gold mineralized vein discovered on south shore of Kapkichi Lake by Gunnar Berg. *1946–1950*: Trenching, ground magnetic survey and diamond drilling by Central Patricia Gold Mines. *1987–1988*: Geological and geophysical surveys and diamond drilling by Umex.

### General Geology

The Wimbabika Lake area is underlain by a narrow northeast-trending belt of metavolcanic rock consisting predominantly of amphibolitized mafic metavolcanic rock (Stott et al. 1989). Mullen (1987a) reported that diamond-drill core, geophysical survey data, and outcrop exposures in the vicinity of Wimbabika Lake indicate that the mafic metavolcanic rock contains a number of horizons of banded chert-magnetite iron formation and thin layers of felsic schist (tuff). Numerous felsic dikes and sills have also been noted to intrude the supracrustal rocks of this area (Mullen 1987a). The mafic metavolcanic-dominated supracrustal rock sequence of this area was classified by Young (2003) as being part of the Pickle Crow assemblage (>2860 Ma). These supracrustal rocks are wedged between granitic rock of the Williams Lake batholith to the north and the Pickle Lake stock to the south (Stott 1996).

### Structural Geology

The most prominent structural feature in this area is a shear or mylonite zone having an approximate orientation of 240/50 (Patterson and Watkinson 1984). This is the structure that hosts the nearby Thierry Mine. Several northeast-striking faults oriented approximately 030/50 were mapped in the Kapkichi Lake area by Patterson (1980); a set of northwest-striking faults (separated by 200 to 300 m) exhibiting sinistral displacements of 50 to 100 m were also mapped to the southeast of Kapkichi Lake by Mullen (1987a).

Cameron (1980) interpreted structural features in the Thierry Mine area as representing 4 separate episodes of deformation. The first deformation event ($D_1$) is represented by compositional layering ($S_1$) within the amphibole schist that forms the hanging wall and footwall of the ore deposit. This deformation event is interpreted to have transposed compositional layering to an orientation approximately parallel to foliation. The $S_1$ fabric was also indicated by Cameron (1980) to be oriented approximately parallel to the Thierry orebody, which was reported to have an orientation that ranges between 240–250/45–55. The second deformation event ($D_2$) was interpreted by Cameron (1980) to have resulted in the development of folds with an axial planar cleavage ($S_2$) having an orientation ranging from approximately 251/54 in the hanging-wall amphibolite schist and 248/46 in the footwall amphibolite schist. Patterson (1980) interpreted the presence of an axial planar fabric oriented approximately 248/68 based on structural measurements taken at locations away from the mine site. The fold axes were reported by Cameron (1980) to be approximately parallel to a well-developed mineral lineation in the amphibolite schist. The orientation of this lineation was reported by Cameron (1980) to vary significantly between the hanging-wall and footwall amphibolite schist, with reported average orientations of 358/47 and 293/36. This discrepancy is interpreted to have been caused during a later rotational deformation event. Patterson (1980) also suggested that a broad bend in the $D_2$ folds. Mullen (1987a) reported a synformal fold in the vicinity of Wimbabika Lake whose axis plunges to the northeast at approximately 40° (i.e., similar to observations at Thierry). A third deformation event ($D_3$) is represented by kink bands that affect the $S_2$ fabric (Cameron 1980). The final interpreted ($D_4$) deformation event was reported by Cameron (1980) to be represented by splay faults in the Thierry orebody and the rotation of the $S_2$ fabric described above.

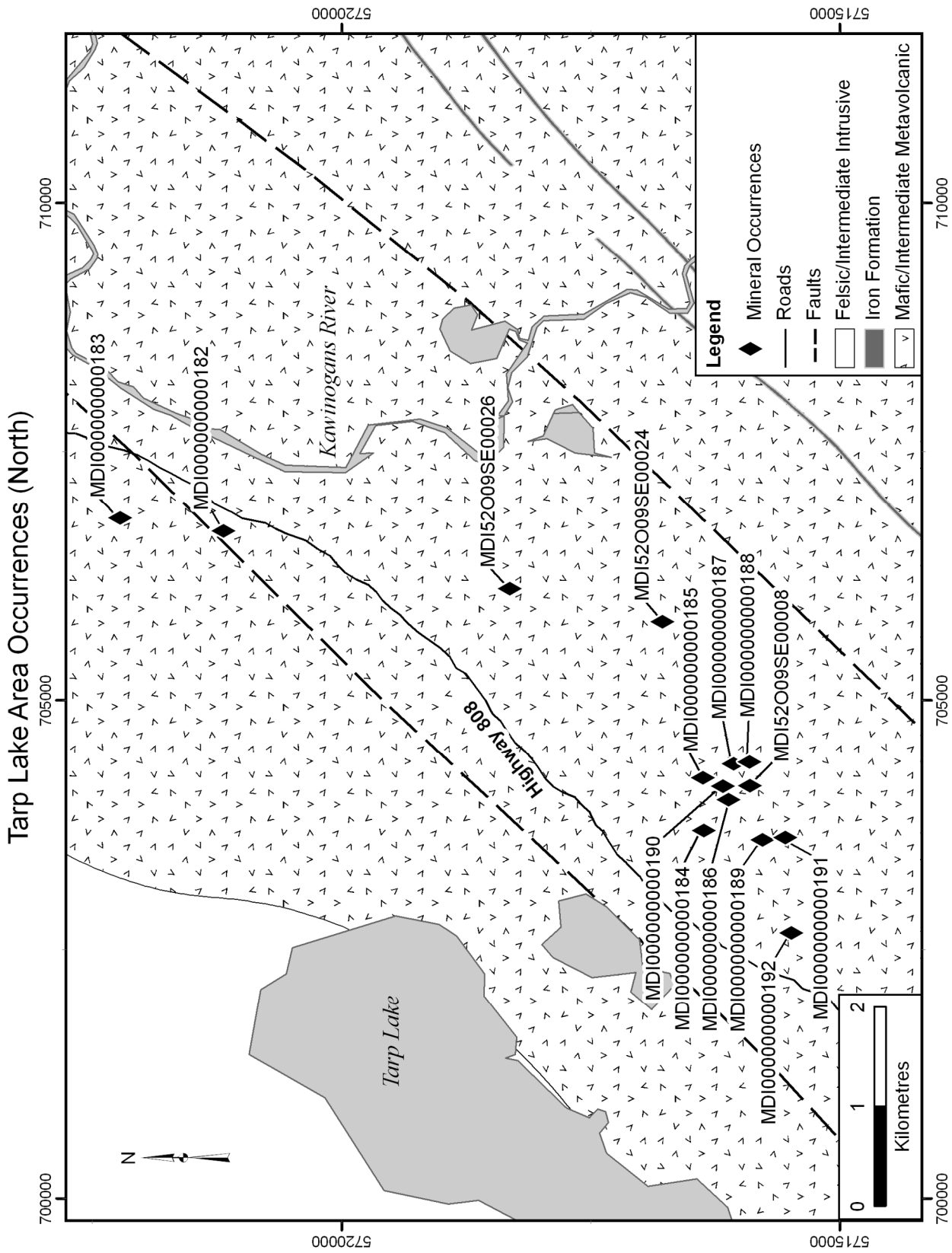
## Deposit Geology

The geology of the deposit is described below.

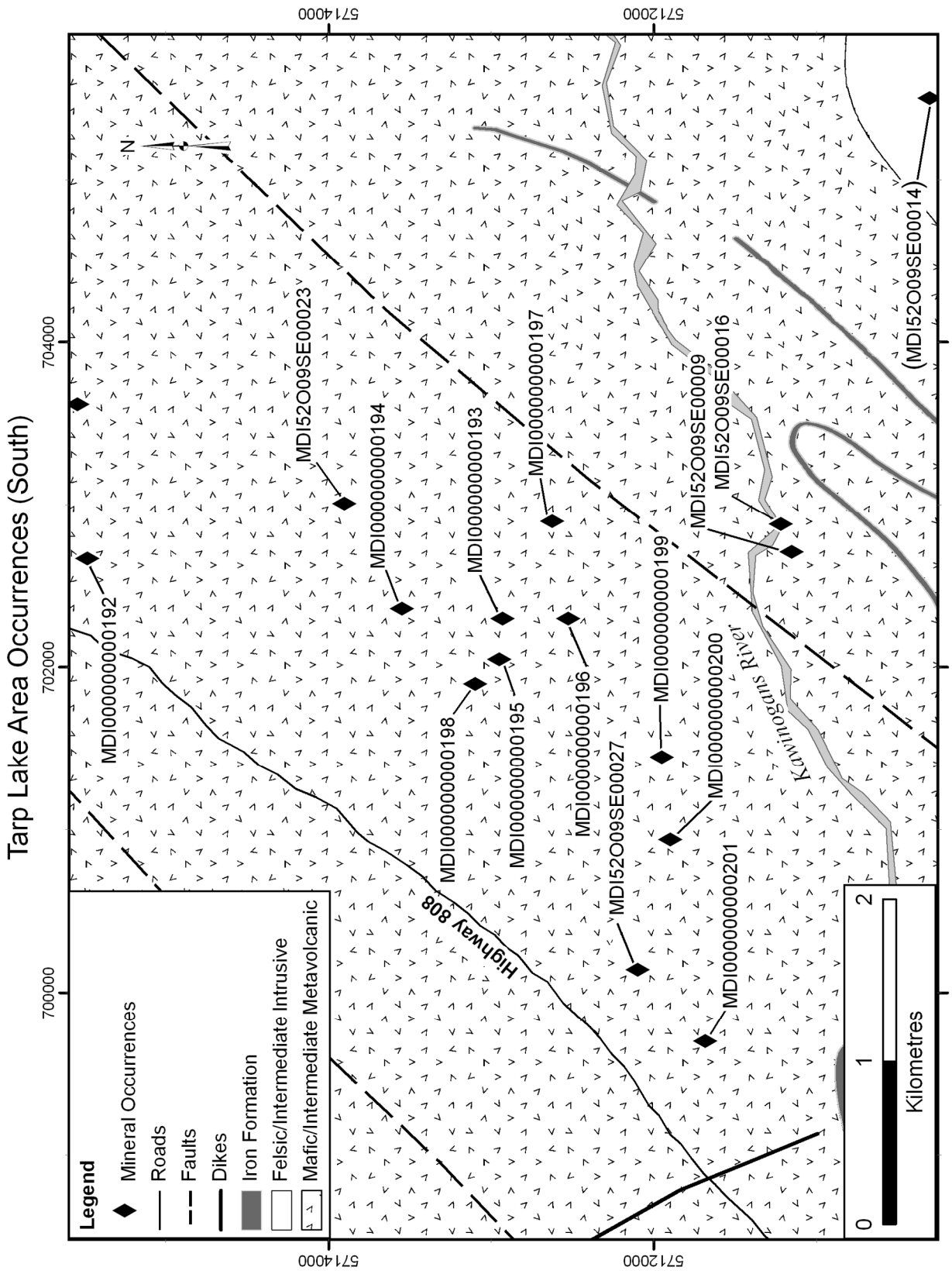
## WIMBABIKA LAKE (WL88-05) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 685265E 5703255N<br>[occurrence 198 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NW) |
| *MNDM Township Area:* | Kapkichi Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000235 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This gold occurrence is located within a unit of altered banded magnetite-chert iron formation that was drilled (DDH WL88-05) by Umex (AFRI# 52O08NW0007) to assess gold potential near the nose of a folded iron formation unit mapped by Mullen (1987a). The folded structure is a synform with a northeast plunging (approximately 40°) axis. Drill hole WL88-05 is located on the northwest limb of this structure. Mullen (1987a) reported that surface mapping in the area indicated that the iron formation occurs within fine- to medium-grained massive to foliated amphibolite (mafic metavolcanic rock), and that these rocks were intruded by granitoid dikes and sills. The diamond-drill hole log for WL88-05 confirms this interpretation. The gold mineralization in WL88-05 is reported on the diamond-drill hole log to occur in an approximately 2.7 m wide section of finely banded, contorted chert-magnetite iron formation. The sulphide content of this horizon was reported to be low, although a single pyritic fracture was noted. The most significant reported assay was 2345 ppb Au over 0.68 m.




NTS 52 O: Tarp Lake area occurrences (north)




NTS 52 O: Tarp Lake area occurrences (south)

# TARP LAKE AREA OCCURRENCES

***Access***: Area is accessed by road via Highway 808.

***Exploration History***: A comprehensive summary of the exploration history of this area is provided by MacTavish (2006).

## General Geology

The Tarp Lake area gold prospects and occurrences are located in the northern portion of the Pickle Lake greenstone belt. These occurrences are found within a mafic metavolcanic rock-dominated supracrustal sequence identified by Young (2003) as being part of the Pickle Crow assemblage (>2860 Ma). According to Young (2003), the Pickle Crow assemblage is dominated by massive and pillowed mafic metavolcanic flows with subordinate (likely synvolcanic) gabbroic sills. MacTavish (2006) described the mafic metavolcanic flows as being commonly well foliated to schistose, amphibolitized, and often finely amygdaloidal. In addition, MacTavish (2006) indicated that the mafic metavolcanic rock include units of pillow and hyaloclastite breccia. The gabbroic sills were described by MacTavish (2006) as fine- to coarse-grained gabbro, melagabbro and ferrogabbro sills up to 200 m thick.

The mafic metavolcanic rock is intercalated with thin, laterally continuous banded iron formation and small, discontinuous lenses of intermediate to felsic metavolcanic rocks. A significant 90 to 125 m thick northeast-trending unit of felsic to intermediate tuff breccia to pyroclastic breccia was reported in this area by MacTavish (2006). Relatively thin units (up to 70 m thick) of clastic metasedimentary rocks were also reported by MacTavish (2006). All lithologies were intruded by semi-concordant feldspar porphyry dikes. These dikes were reported by MacTavish (2006) to vary widely in thickness and lateral continuity. MacTavish (2006) also indicated that all lithologies are crosscut by late biotite lamprophyre dikes that are up to 5 m in thickness. One of these dikes was reported to contain ultramafic and country rock xenoliths, red garnets and greenish diopside.

Stratigraphy in the Tarp Lake area generally faces toward the northwest, except where asymmetric folding (mainly further to the southeast in the Pickle Crow Mine area) has caused reversals in the younging direction (Young 2003).

## Structural Geology

The dominant geological structure in the Tarp Lake area is the Tarp Lake shear zone. This structure strikes northeast and forms a wide, diffuse and anastomosing deformation zone that is poorly exposed and characterized (MacTavish 2006). The mafic metavolcanic rock affected by this shear zone is characterized by moderate to intense carbonatization, sericitization and local silicification (MacTavish 2006). This alteration zone hosts the numerous gold occurrences throughout the area. Many of the more significant gold prospects appear to be located where the Tarp Lake shear zone is intersected by splays and/or later fault zones or shear zones, or relatively competent lithological units such as porphyry intrusions, gabbro and iron formation. The crosscutting deformation zones are most commonly reported to strike approximately northwest, east and north-northeast. Similar complex faulting or shearing patterns were noted by MacQueen (1987) nearby in the vicinity of the Pickle Crow gold mine, and by McAuley and Winter (1990) in the vicinity of a number of gold occurrences in the July Falls area.

## Deposit Geology

The geology of each of the individual deposits is described below.

## 7 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704000E 5716115N<br>[occurrence 211 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000186 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The 7 zone occurrence was described by MacTavish (2006) as consisting of a number of thin (<15 cm), boudinaged, crack-seal quartz veins. These veins occur in narrow shear zones within variably carbonatized pillowed mafic volcanic flows and interflow breccias. The veins strike 225 with dips ranging from 64 to 74° (toward northwest). Channel samples collected from this zone in 2003 by MetalCORP (MacTavish 2006) returned assays of 34.15 g/t Au over 0.12 m from vein 1 and 21.56 g/t Au over 0.1 m from vein 2. Diamond drilling of the 7 zone by MetalCORP (MacTavish 2004) encountered numerous mineralized quartz veins and alteration zones. These included 4 zones of silicification, carbonatization, disseminated pyrite (up to 5%) and disseminated arsenopyrite (up to 2%) mineralization in DDH PM04-02. One of these arsenopyrite-bearing zones assayed 1.55 g/t Au over 0.7 m.

## 77-2 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702300E 5712930N<br>[occurrence 223 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000193 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on an anomalous gold assay obtained from a diamond-drill hole drilled by Rio Tinto in 1977 and re-sampled by Billiton in 1985 (Esso Minerals Canada 1986a). The mineralized material was described as mixed felsic tuff containing a number of graphite/pyrite units (Esso Minerals Canada 1986a). An assay of 0.89 g/t Au over 2.44 m was reported from a sample of the most pyrite-rich material.

## ABYSS ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704360E 5716065N<br>[occurrence 213 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000187 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Abyss zone occurrence was described by MacTavish (2006) as consisting of a series of white to rusty, sulphide-rich, subparallel quartz veins and veinlets. The quartz vein system occurs within fine-grained mafic metavolcanic rock and has a minimum width of 20 m and a minimum strike length of 90 m. The veins vary in width from a few millimetres to 30 cm, and are strongly deformed in some places (MacTavish 2006). The veins contain between 2 and 30% disseminated, coarsely blebby and stringered pyrite and trace chalcopyrite. The mafic metavolcanic rock adjacent to the veins is silicified and carbonatized, variably pyritic and occasionally brecciated. Grab samples of quartz vein material assayed up to 6.66 g/t Au and 14 ppm Ag, whereas altered mafic metavolcanic rock assayed as high as 3.04 g/t Au (MacTavish 2006).

## BEST OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702900E 5712625N<br>[occurrence 224 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000197 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Best occurrence was described as brecciated chlorite-rich rock with interstitial quartz-carbonate material containing minor sulphides (Esso Minerals Canada 1986a). The host rock was further described by MacTavish (2006) as mafic metavolcanic. The mineralized structure was reported to be at least 0.5 m wide (Esso Minerals Canada 1986a). Grab samples collected from this outcrop by Billiton in 1985 assayed as high as 1035 ppb Au (Esso Minerals Canada 1986a).

## BEST ONE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 701900E 5713100N<br>[occurrence 221 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000198 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Best One zone was described as an area of pyritic and intensely carbonatized pillowed mafic volcanic rock (Esso Minerals Canada 1986b). Foliation in this area strikes northeast, parallel to the regional magnetic trends. The best assay in this report was 0.69 g/t Au from a sample consisting of material from a tightly folded 1 cm wide quartz vein and pyritic wall rock (Esso Minerals Canada 1986b).

## CARBONATE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703600E 5715775N<br>[occurrence 216 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000189 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Carbonate zone was described as a broad zone of intense ankerite alteration with gradational contacts with the surrounding, less altered pillowed mafic volcanic flows (Homestake Canada 1992). The alteration zone was reported to strike between 080 and 090. This zone is characterized by evidence of significant deformation, including fracturing, brecciation, weak silicification and elevated sulphide content. Mineralization consisted of fine disseminated and stringer pyrite and fine arsenopyrite fracture fillings, with higher gold values associated with arsenopyrite (Homestake Canada 1992). The sulphide concentrations locally approach 10 to 15%. Mineralization was reported to occur in 2 zones oriented approximately 270–275/50–80 and 340–350/70–80 (Homestake Canada 1992). The carbonate alteration zone was reported to be cut off at the west end of the outcrop exposure by a northeast-striking fault (Homestake Canada 1992). To the east, the alteration zone was reported to extend eastward a minimum of 350 m to Dora Exploration DDH D-24 (AFRI# 52O09SE0129) (Homestake Canada 1992). Similar alteration and mineralization was reported at depth in an approximately 35 m wide intersection in MetalCORP DDH PM04-06 (MacTavish 2004).

A number of anomalous gold assay results have been reported for this prospect from channel sampling and diamond drilling. Channel sampling results reported by Homestake Canada (1992) included 2.25 g/t Au over 4.8 m and 1.48 g/t Au over 4.8 m. An assay of 1.127 g/t Au over 12 m was reported by MacTavish (2004) from MetalCORP DDH PM04-06.

## CB-10 (77-1) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703009E 5713905N<br>[occurrence 219 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00023 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on reported anomalous gold assays obtained from massive pyrite and pyritic felsic tuff encountered during drilling of 2 diamond-drill holes (88-CB-10 and 77-1) by Esso Minerals Canada (AFRI# 52O09SE0032 and AFRI# 52O09SE0050, respectively) at locations within 75 m of each other (*see also* Homestake Canada 1991, geology compilation map). Drill hole 77-1 is reported to have intersected

23 m of massive pyrite within material logged as felsic tuff/agglomerate. The log for drill hole 88-CB-10 reports the presence of an approximately 12 m wide section of massive pyrite at the contact between silicified mafic metavolcanic rock and brecciated wacke containing pyrite concretions and veins. Reported assays include 1.54 g/t Au over 0.9 m (massive pyrite) and 4.08 g/t Au over 0.9 m (pyritic tuff) in DDH 77-1 (AFRI# 52O09SE0050), and 1.37 g/t Au over 1.76 m (massive pyrite) in DDH 88-CB-10 (AFRI# 52O09SE0014).

## CH-1 TRENCH OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 699700E 5711685N<br>[occurrence 226 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000201 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The CH-1 trench occurrence was reported by MacTavish (2006) to consist of discontinuous quartz-carbonate breccia veins, localized boudinaged pods and minor stockwork veins within a 10 m wide, variably sheared zone of strongly carbonatized mafic metavolcanic flows. Esso Minerals Canada (1986a) reported that a grab sample collected from this location assayed 1.65 g/t Au.

## ESSO ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702300E 5712525N<br>[occurrence 225 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers:* | MDI000000000196, MDI52O09SE00021, MDI52O09SE00022 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Esso zone was described as being located in a broad zone of intense hydrothermal alteration within a predominantly mafic metavolcanic rock sequence (Homestake Canada 1991). Several 060-striking, near-vertically dipping sulphide-, oxide- and silicate-facies iron formations occur within these alteration zones. Diamond drilling by Esso Minerals Canada and Homestake Canada between 1988 and 1998 identified a silicate-facies iron formation that contains anomalous gold values over appreciable widths in an area covering a strike length of 240 m (Homestake Canada 1991) and to a depth of 165 m (Panagapko 1997). The limits of the zone are defined by DDH 89-CB-01 and CB-90-04 to the southwest and DDH CB-90-07 to the northeast. The limits of the mineralized zone were interpreted to be controlled by faults (Homestake Canada 1991). MacTavish (2006) indicated that Homestake Canada described the mineralization as consisting of chert-sulphide layers containing mainly pyrrhotite, within strongly carbonatized and sericitized mafic to intermediate metavolcanic rocks. Significant assay results reported from this prospect include 9.5 g/t Au over 1.2 m in DDH 89-CB-02, 4.33 g/t Au over 3.4 m from DDH CB-90-02, 2.10 g/t Au over 4.7 m from DDH CB-90-03, 3.07 g/t Au over 4.6 m from DDH CB-90-11 and 2.29 g/t Au over 1.5 m from DDH CB-97-01 (MacTavish 2006).

## JESSIE VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 704220E 5716375N<br>[occurrence 209 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000185 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Jessie vein was described by MacTavish (2006) as a boudinaged and locally brecciated northeast-striking quartz vein. The vein is up to 5 cm wide and has been traced for a strike length of 30 m within a single outcrop. The vein is hosted within variably foliated mafic metavolcanic rock. Where vein brecciation occurs, the groundmass is strongly chloritized and can contain up to 25% blebby pyrite (MacTavish 2006). Where the vein has not been significantly disturbed, it is reported to contain disseminated pyrite. The most favourable assay reported from this occurrence was 6.82 g/t Au in a grab sample of vein material (MacTavish 2006).

## JIGGER OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702360E 5713550N<br>[occurrence 220 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000194 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Jigger occurrence was described by MacTavish (2006) as a 2 to 10 cm thick, variably boudinaged quartz-carbonate vein containing trace finely disseminated pyrite and fine visible gold. The vein is hosted within a narrow shear zone in pervasively carbonatized, and locally silicified and sericitized pillowed mafic metavolcanic rock. Grab samples collected from this vein by MetalCORP in 2004 are reported to have assayed between 19.58 and 95.63 g/t Au.

## L22E OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703690E 5716365N<br>[occurrence 210 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000184 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The L22E occurrence was described by MacTavish (2006) as a narrow, strongly contorted white quartz vein containing trace pyrite, pyrrhotite and rare chalcopyrite. The mineralized quartz vein is hosted in rocks described by MacTavish (2006) as fine-grained, variably foliated mafic metavolcanic flows. The most favourable assay reported from this occurrence was 1.11 g/t Au from a grab sample of quartz vein material (MacTavish 2006).

## MARIPOSITE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 701450E 5711950N<br>[occurrence 229 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers:* | MDI000000000199, MDI52O09SE00020, MDI52O09SE00025 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Mariposite zone occurs within an altered, mineralized and deformed iron formation sequence (MacTavish 2006). This is interpreted to be the same iron formation that hosts the nearby Esso prospect. Rocks at surface in close proximity to the gold mineralization (encountered only during diamond drilling) were described as sericitized and highly carbonatized pillowed volcanic rocks with patchy mariposite alteration and local pyrite (Esso Minerals Canada 1986b). One narrow 4 cm wide quartz vein was noted in this outcrop. Significant gold assays reported from diamond drilling at this location include 4.11 g/t Au over 0.5 m in DDH 88-CB-02, 1.25 g/t Au over 2.3 m in DDH 88-CB-03 and 1.75 g/t Au over 1 m in DDH 89-CB-04 (Homestake Canada 1991).

## METCALFE EAST OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704380E 5715905N<br>[occurrence 214 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000188 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Metcalfe East occurrence was described by MacTavish (2006) as variably altered mafic metavolcanic flows containing numerous quartz and quartz-carbonate stringers or veinlets or veins. The quartz veins are mineralized with up to 20% disseminated to stringer pyrite. Assay results from surface grab samples collected by MetalCORP in 2004 were up to 1.11 g/t Au.

## METCALFE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704140E 5715900N<br>[occurrence 215 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers:* | MDI52O09SE00008, MDI52O09SE00011, MDI52O09SE00017 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The surface expression of the Metcalfe zone was described by MacTavish (2006) as consisting of numerous narrow, boudinaged, white to pink, crack-seal quartz veins, veinlets and stringers within fine- to medium-grained melagabbro to gabbro. The host gabbro intrusion is described as a sill approximately 200 m wide, and is crosscut by several porphyry and biotite lamprophyre dikes. Wall-rock alteration in the host gabbro was reported to consist of chlorite, carbonate and weak silicification confined to an area within centimetres of the vein contacts (Homestake Canada 1992). Existing trenches indicated that the zone of quartz veining ranges from 20 to 42 m in width at surface, with quartz veins up to 20 cm thick (MacTavish 2006). The quartz veins strike between 205 and 220, and dip 54 to 82° (to the northwest). Foliation in sheared, pillowed mafic volcanic rock south of the gabbro was oriented 060/80 (Homestake Canada 1992). The gabbro unit was referred to as a massive flow by G.W. Potts (*in* Homestake Canada 1992), who observed that the gabbro in this area appears to have experienced brittle deformation, whereas the pillowed flows are sheared. Mineralization in the quartz veins consists of disseminated pyrite and occasional visible gold (MacTavish 2006). Minor chalcopyrite, carbonate and hematite, rare fuchsite and trace molybdenite were also reported in quartz veins (Homestake Canada 1992). MetalCORP reported surface grab sample assays of up to 2232.92 g/t Au (MacTavish 2006) from the main mineralized vein.

Significant diamond drilling (approximately 43 drill holes) has also been carried out on the Metcalfe prospect by several companies since 1947. This historic work outlined a narrow quartz vein system over a strike length of approximately 500 m that contains sporadic high gold values (Homestake Canada 1992). Diamond-drilling results for the Metcalfe vein reported by Norpick Gold Mines Ltd. in 1947 (AFRI# 52O09SE0136) included 2.15 ounces per ton gold over 6 feet in DDH S-18, 0.47 ounce per ton gold over 5.4 feet in DDH S-14 and 0.83 ounce per ton gold over 6 feet in DDH S-11 (based on gold price of $35 per ounce). Diamond drilling of this occurrence was also completed by Norpax Nickel Mines (AFRI# 52O09SE9003) in 1958 (1.0 g/t Au over 1.52 m in DDH X-7) and Dora Explorations (AFRI# 52O09SE0129 and 52O09SE8999) in 1979 (up to 2.4 ounces per ton gold over 1 foot in DDH D-2). More recent diamond-drilling results reported by MetalCORP (MacTavish 2004) for the Metcalfe prospect include 0.861 g/t Au over 0.95 m in DDH PM04-03, 0.509 g/t Au over 1.4 m in DDH PM04-04, and 1.97 g/t Au over 1.45 m in DDH PM04-05. These anomalous assay values are reported to have been obtained from altered porphyry, sheared and altered gabbro and mafic metavolcanic rock, and quartz veins. The reported occurrence of mineralization in the mafic metavolcanic rock suggests that the Metcalfe zone is not confined to the gabbro intrusion. Higher assays of up to 7.5 g/t Au (in PM04-05) were reported by MacTavish (2004) from shorter intersections (typically 0.3 m) that included mineralized quartz veins or veinlets.

## MITCHELL ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 700140E 5712100N<br>[occurrence 227 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00027 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Mitchell zone was described by MacTavish (2006) as being located within a fractured, silicified, sericitic quartz porphyry sill hosted within foliated intermediate tuff. The tuff unit is silicified and carbonatized adjacent to the sill contact. MacTavish (2006) indicated that gold occurs within or closely associated with quartz veins (up to 30 cm thick) or quartz stringer zones that fill fractures within the porphyry intrusion. Earlier examination of this area (Esso Minerals Canada 1986a) reported that younger mafic and lamprophyre dikes postdate and crosscut the porphyry intrusions. This 1986 report identified 3 sets of faults or shears at this location that postdate foliation-parallel shearing. Foliation strikes approximately 080, whereas the later faults or shears are reported to strike 180, 135 and 140 [however, it should be noted that the trench map [by J.A. Goodwin *in* Esso Minerals Canada 1986a] actually illustrates shears that appear to strike 035 to 040]. The largest quartz vein (Mitchell vein) was reported by J.A. Goodwin to be hosted in the 180-striking fault; a second, narrow quartz-carbonate vein occurred within the 135 (035?)-striking fault. The 140 (040?)-striking faults were interpreted to be the youngest, and were reported to offset stratigraphy by up to 10 m. Goodwin also noted that quartz veins and stockworks are strongly developed within the porphyry and generally strike 135 and 020. Stockwork veins are also reported to occur in the mafic dikes, whereas veining is less well developed in the volcanic rock and, where present, follows the trend of foliation. Significant assays obtained from the Mitchell zone were reported by MacTavish (2006) to include 10.97 g/t Au over 1.22 m and 8.23 g/t Au over 3.6 m from diamond-drill holes drilled at this location in 1947; assays of 6.65 g/t Au over 2.2 m and 13.89 g/t Au over 1 m from channel samples collected by Billiton in 1985.

## PP91-01 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704135E 5716170N<br>[occurrence 212 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000190 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The presence of anomalous gold concentrations (0.632 g/t Au over 1.03 m) in interflow sediments that occur within a sequence logged as foliated basalt were reported in DDH PP91-01 (Homestake Canada 1992). A second anomalous intersection (0.722 g/t Au over 0.3 m) was reported from material logged as containing a quartz carbonate vein with 5 to 8% pyrite. This hole was drilled to explore for an eastern extension of the Carbonate zone prospect. However, it is unclear if the mineralization noted at this location is related.

## PIC–PAT SYNDICATE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702880E 5711219N [occurrence 230 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00009 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence was reported by Roach and Adams (1987) as being hosted within an iron formation horizon on the northern limb of the Central Patricia anticline. The mineralized iron formation is part of a mafic metavolcanic-dominated sequence that was reported to contain relatively thin clastic metasedimentary units. These rocks were also reported to be crosscut by lamprophyre dikes. The diamond-drill hole record for Pic–Pat Syndicate DDH No. 1 (AFRI# 52O09SE0405) indicates that the mineralized iron formation horizon is brecciated and contorted with fine disseminated pyrite and pyrrhotite. The most favourable assay was reported in a section of the iron formation containing narrow fractures filled with blue/grey quartz. The most significant reported assay was 0.27 ounce per ton gold over 2.5 feet.

## PUFFIN (LINE 40) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 700940E 5711900N [occurrence 228 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000200 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Puffin occurrence was described by MacTavish (2006) as sheared and altered mafic metavolcanic rock locally crosscut by locally folded quartz stringers and veins up to 10 cm in thickness. The most significant reported assay from this location is 3.57 g/t Au from a surface grab sample (Esso Minerals Canada 1986a).

## SAVOY OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702710E 5711151N [occurrence 231 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00016 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is indicated on the diamond-drill hole log for Savoy Copper Mines DDH No. 4 (AFRI# 52O09SE0130) to be found in banded iron formation containing fine pyrite and/or pyrrhotite, and quartz veining. The highest reported assay was 0.03 ounce per ton gold over 1.5 feet (reported as $1.05/ton based on 1960 gold price of $35 per ounce).

## SPRING ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703620E 5715545N<br>[occurrence 217 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000191 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Spring zone was described as being hosted within moderately to highly sheared and carbonatized mafic metavolcanic rock (Homestake Canada 1992). Shearing is oriented 060/80 and increases in intensity toward the southern margins of the surface exposure. The alteration consists of varying ankerite and weak silicification with trace amounts of disseminated pyrite. Homestake Canada (1992) indicated that, in 1946, Norpick Gold Mines obtained an assay of 1.51 g/t Au over 1.22 m from a diamond-drill hole advanced through the Spring zone.

## TARP LAKE EAST ZONE AND WEST ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 706700E 5721185N<br>[occurrence 206 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000182 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Tarp Lake prospect occurs within the Tarp Lake shear zone and consists of 2 mineralized zones (East and West) that occur in silicified, bleached and sulphide enriched (up to 10% pyrite) quartz-chlorite-carbonate schist (Inmet Mining 1995). These mineralized zones occur approximately 60 m apart, within the hinge of an interpreted fold (Inmet Mining 1995). The East zone has been traced along strike for approximately 245 m and to a depth of 150 m, with the most notable reported assays including 7.2 g/t Au over 4.6 m in DDH GPT-90-12 (Inmet Mining 1995) and 1.5 g/t Au over 36 m in DDH TL-29 (Inmet Mining 1997). The West zone has also been encountered during drilling of a number of diamond-drill holes, with the most notable assay being 4.46 g/t Au over 5.2 m in DDH CGR-91-15 (Inmet Mining 1995). Additional drilling of this prospect carried out by Berland Resources in 1998 encountered a massive sulphide vein that assayed 11% Zn and 4.9 g/t Au over 0.55 m in DDH TL98-30 (Berland Resources 1999).

## TL-4 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 705790E 5716779N<br>[occurrence 208 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00024 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The TL-4 zone is described on the log for Umex diamond-drill hole TL-4 (AFRI# 52O09SE0019) as consisting of ankeritized, sericitized mafic volcanic rocks crosscut by quartz and quartz-carbonate stringers, veinlets and veins. The mineralized zone is also described as being foliated, with some quartz and/or carbonate veins showing evidence of folding. Disseminated pyrite and tourmaline were reported in the alteration or deformation zone, with chalcopyrite having been identified in a calcite vein. The highest reported assay (1250 ppb Au over 1 m) was obtained from mafic metavolcanic rock containing disseminated black tourmaline, immediately adjacent to a 0.4 m wide quartz vein intersection. The mineralized structure encountered in drilling at this location strikes northeast and has been interpreted to be the faulted equivalent of the shear zone that hosts the TL-7 zone occurrence. The inferred north-northeast-striking fault that offsets the mineralized shear hosting the TL-7 and TL-4 zones was illustrated by Mullen (1987b).

## TL-7 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 706124E 5718310N<br>[occurrence 207 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00026 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The TL-7 zone was described by MacTavish (2006) as pervasively ankeritized, strongly bleached, and weakly calcium-carbonatized, pillowed mafic flows that are crosscut by quartz and quartz-carbonate stringers, veinlets and veins. This alteration zone also contains up to 1 to 2% disseminated pyrite and 1 to 2% disseminated arsenopyrite. The highest gold values were reported by MacTavish (2006) to coincide with quartz veining and arsenopyrite mineralization. The mineralized structure encountered in drilling at this location has been interpreted to be the faulted extension of the northeast-striking shear zone that hosts the TL-4 zone occurrence. The inferred north-northeast-striking fault that offsets the mineralized shear hosting the TL-7 and TL-4 zones was illustrated by Mullen (1987b). During a 1987 diamond-drilling program (AFRI# 52O09SE0019), Umex reported a gold grade of 1.16 g/t Au over 8.6 m in DDH TL-7 (MacTavish 2006).

## TL-26 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 706830E 5722225N<br>[occurrence 205 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Cu, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Polymetallic |
| *MDI Reference Number:* | MDI000000000183 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Inmet Mining (1995) reported that copper, silver and gold mineralization was encountered at this location within sheared chlorite-biotite basalt. The mineralization occurs as a 2.5 m wide zone containing chalcopyrite and pyrite veinlets associated with quartz and calcite. The most significant assay result reported from this zone, from DDH TL-26, was 2% Cu, 438 ppb Au and 14.8 g/t Ag over 1 m (Inmet Mining 1995).

## TRIPLE X OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702050E 5712950N [occurrence 222 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000195 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Triple X occurrence is found within variably sheared, ankeritized, sericitized and sometimes quartz-veined zone of pyritic (trace to 5% disseminated pyrite) mafic metavolcanic rocks (MacTavish 2006). The altered host rock and veins both contain gold mineralization. MacTavish (2006) indicated that this mineralized zone has similarities to the Carbonate and Jigger occurrences, which are located along strike to the northeast. Grab sample assays of up to 1.78 g/t Au in the altered mafic metavolcanic rock and up to 3.09 g/t Au in the quartz veins were reported by MetalCORP (MacTavish 2006).

## WEST VEIN OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702670E 5715485N [occurrence 218 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township Area:* | Tarp Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000192 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The West vein was described as a 0.3 to 2.0 m wide milky-white quartz vein with minor carbonate fracture filling (Homestake Canada 1992). The host rock was described as a pervasively carbonatized and chloritized mafic metavolcanic flow. The vein strikes approximately 110, with a near-vertical dip. Ladder veins with an orientation of 020/82 were noted to branch off the main vein (Homestake Canada 1992). The vein has been traced over a strike length of 70 m. The vein was reported to pinch out toward the east (near the contact with a quartz-feldspar porphyry dike), whereas it remains open to the east where it is obscured by a swamp (Homestake Canada 1992). Although the overall sulphide content of the West vein is reported to be low, it was noted that chalcopyrite and pyrite occur in localized fine-grained masses containing 5 to 8% sulphides (Homestake Canada 1992). These sulphide-rich zones appear at surface as hematitic patches. The most favourable reported assay from this occurrence is 4.9 g/t Au from a grab sample of hematitic material with 1 to 2% pyrite (Homestake Canada 1992). Homestake Canada also reported an assay of 0.65 g/t Au from a 1.0 m channel sample collected across the vein.

# CENTRAL PATRICIA AREA OCCURRENCES

***Access***: Road access to the area is obtained via Highway 599 and the Pickle Crow Mine Road.

***Exploration and Development History***: *1929*: Trenching and diamond drilling of Central Patricia deposit by Central Patricia Mines. *1930*: Exploration shaft sunk at Central Patricia deposit. *1934–1951*: Production of 621 806 ounces of gold and 58 349 ounces of silver from 1 729 248 tons of milled ore from the Central Patricia Mine. *1980–1986*: Geological, geophysical and geochemical surveys and diamond drilling by Golden Shadow Resources. *1986–1989*: Geological, geophysical and geochemical surveys and diamond drilling by Noramco Explorations for Quinterra Resources and Pure Gold Resources. *2003–2006*: Geological surveys and diamond drilling by King's Bay Gold and Richview Resources.

## General Geology

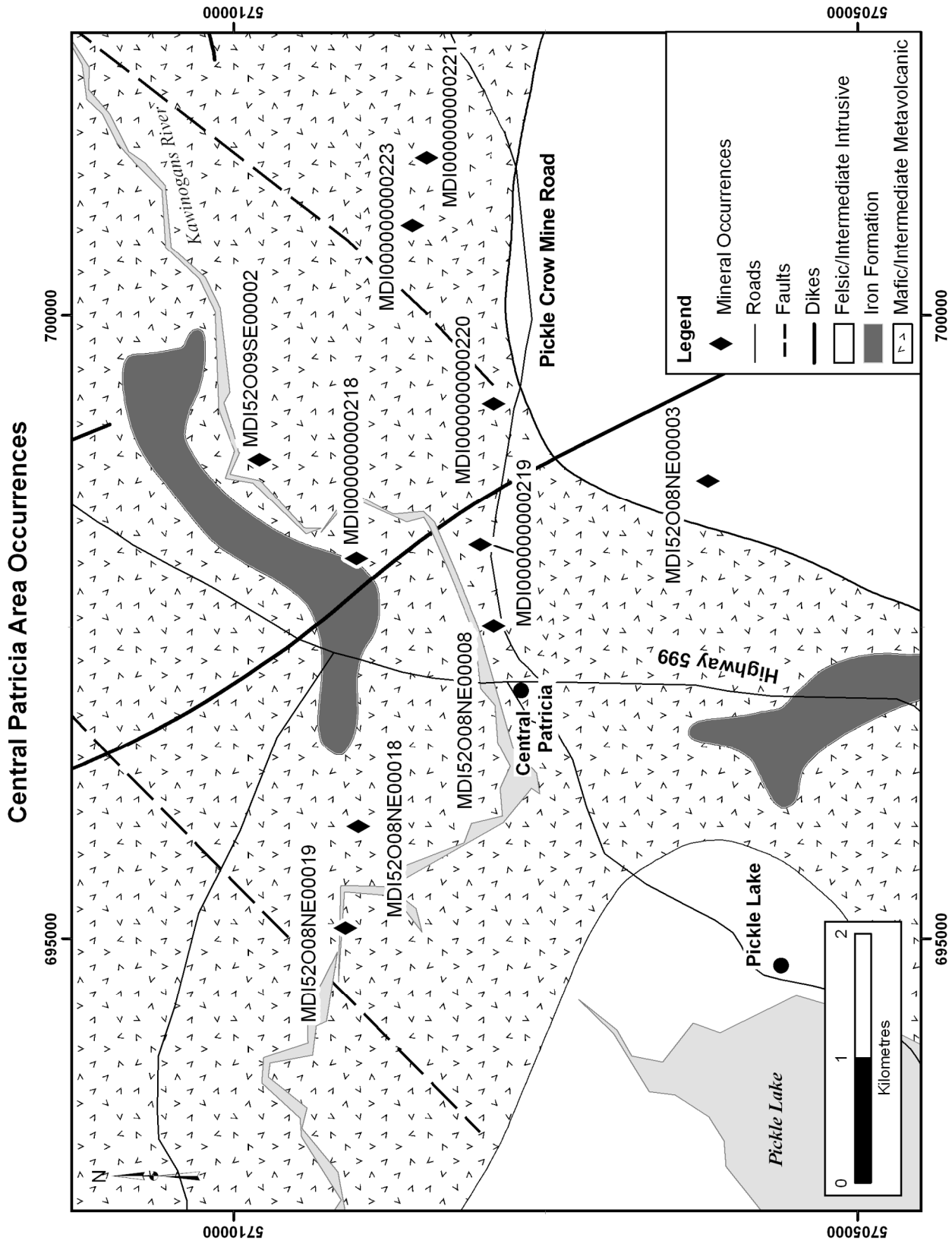
Rocks in the vicinity of the Central Patricia gold mine are dominated by pillowed mafic metavolcanic flows, with secondary amounts of tuff, lapilli tuff and agglomerate (Noramco Explorations 1988). These rocks are intercalated with intermediate to felsic metavolcanic rocks, banded iron formation, clastic metasedimentary rock and quartz-albite porphyry (Noramco Explorations 1988). The south-central portion of the property was intruded by the granitic Hooker–Burkoski stock.

Stott (1996) described the mafic metavolcanic rocks of the Central Patricia–Pickle Crow area as typically pillowed flows that have been extensively carbonatized and strongly deformed. The intermediate to felsic metavolcanic rocks of the Central Patricia area were described as being tuffs that can often be difficult to differentiate from silicified mafic tuffs (Noramco Explorations 1988). The iron formation units were described by Stott (1996) as magnetite-chert iron formation with interbedded greenish mudstone and local graphitic schist. The mudstone and graphitic schist interbeds are extensively ferroan dolomitized in the vicinity of Central Patricia and Pickle Crow (Stott 1996). This alteration has been noted to be spatially associated with the carbonatized mafic metavolcanic rock. The Central Patricia deposit was hosted within an iron formation unit that pinches and swells, having a thickness ranging from a few centimetres up to approximately 21 m (Pye 1976). The quartz feldspar porphyry sills that intrude the mafic metavolcanic rock were described by Stott (1996) as lenticular bodies containing 3 to 5 mm quartz and feldspar phenocrysts within a fine- to medium-grained matrix. These intrusions generally conform to schistosity, and are often strongly sheared. The Hooker–Burkoski stock is a quartz-phyric, biotite, sodic trondhjemite (Stott 1996).

Young (2003) identified the supracrustal rocks of the Central Patricia area as being part of the Pickle Crow assemblage (>2860 Ma). The approximate age of the Pickle Crow assemblage was inferred from a U/Pb age determination of circa 2860 Ma obtained from a quartz porphyry sill in this area (Stott 1996).

## Structural Geology

Pye (1976) indicated that the principal structural feature in the vicinity of the Central Patricia Mine is the Central Patricia anticline. The axial plane of this structure strikes approximately east in the vicinity of Central Patricia; further to the east, the strike of the axial plane orientation changes to northeast. Pye (1976) also noted that shear zones oriented approximately parallel to the fold axial plane, and dipping steeply to the north (i.e., at 70 to 75°) are commonly observed in less competent stratigraphic horizons. An east-striking zone of intense shearing and drag folding was described by Pye (1976) at the north contact of the gold-mineralized iron formation. The east-striking shear zones described by Pye (1976) are likely to be the equivalent of the $D_2$ shear zones described by MacQueen (1987) nearby in the Pickle Crow Mine area. A second prominent set of northwest-striking shears and faults was also reported by Pye (1976) in the Central




NTS 52 O: Central Patricia area occurrences

Patricia area. These structures are interpreted to postdate the $D_2$ shear zones, and dip 60 to 65° to the northeast. The northwest-striking faults described by Pye (1976) are likely to be equivalent to the third-generation northwest-striking $D_3$ faults recognized by MacQueen (1987) in the Pickle Crow area. Late north-northeast-striking faults were also described by Pye (1976) at the Central Patricia Mine. These structures are likely to be equivalent to similar $D_3$ faults described by McQueen (1987) at Pickle Crow.

## Deposit Geology

The geology of each of the individual deposits is described below.

## CENTRAL PATRICIA NO. 1 MINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 697509E 5707914N<br>[occurrence 236 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Past-Producing Mine without Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

A total of 621 806 ounces of gold and 58 349 ounces of silver were produced from 1 729 248 tons of milled ore on the Central Patricia Mine property between 1934 and 1951. The majority of this production (608 650 ounces gold) was obtained from the Central Patricia No. 1 Operation; the remainder was mined from the No. 2 (Springer) Operation (Ferguson, Groen and Haynes 1971).

The Central Patricia gold deposit was a stratabound, iron formation-hosted sulphide replacement orebody that strikes approximately east and dips steeply to the north. Gold mineralization was reported by Pye (1976) to have consisted of auriferous sulphide minerals deposited along, and replacing iron formation outward from closely spaced tension fractures in iron formation. In the upper portions of the orebody, the mineralized fractures originated at the hanging-wall (north) contact, and extended southward (i.e., perpendicular to contact) into the iron formation, only rarely extending to the footwall contact (Pye 1976). These fractures were reported by Pye (1976) to have an average strike orientation of 004, with a range of orientations about the 004 plane between 320 and 035. Mineralization along the transverse fractures consisted of pyrrhotite, arsenopyrite, pyrite, chalcopyrite, dark green chlorite and ankerite. Many of the fractures were also reported by Pye (1976) to have contained a central filling of smoky quartz. Frequently, sulphide mineralization occurred outward from the fracture fillings along magnetite or siderite-rich iron formation laminae; occasional irregular masses of complete sulphide replacement were also reported (Pye 1976). Deeper in the orebody, the characteristics of the fractures and mineralization patterns were reported by Pye (1976) to have changed significantly. The fracture orientations changed to be largely parallel to bedding, and sulphide replacement extended much further into the iron formation. Pye (1976) attributed the changes in the characteristics of the mineralization to an increase in the iron oxide content of the iron formation with depth. The change in mineralization style also corresponded with a decrease in grade with depth, with the highest gold grades being associated with the fracture-filling sulphides that were present in larger quantities higher in the orebody (Pye 1976). Mineralized fractures were indicated by Pye (1976) to have generally occurred in groups that could be delineated as mineable ore shoots. Isolated fractures containing appreciable gold values were generally left in place, as the overall grade of mineralization in these portions of the iron formation was considered to be sub-economic (Pye 1976). The overall sulphide content of the ore was reported by Pye (1976) to be approximately 18%, consisting of pyrrhotite, arsenopyrite, pyrite and chalcopyrite in decreasing order of abundance.

At the time that operations at the Central Patricia No. 1 Mine ceased, no remaining un-mined reserves were reported (Ferguson, Groen and Haynes 1971). A study by McGregor (1993) also did not identify any additional reserves at this location, although a limited amount of open pit reserves were identified near the Central Patricia No. 2 site.

## CP-8

| | |
|---|---|
| *Location:* | UTM Zone 15, 701266E 5708452N<br>[occurrence 240 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000221 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The CP-8 occurrence is based on a reported assay of 0.047 ounce per ton gold over 0.76 m in mafic metavolcanic rock in DDH CP-87-8 (Noramco Explorations 1988). This occurrence appears to be along strike with the CP-12 occurrence, which is located approximately 600 m west-northwest. No diamond-drill hole log is available in the assessment files.

## CP-12

| | |
|---|---|
| *Location:* | UTM Zone 15, 700727E 5708566N<br>[occurrence 239 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000223 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The CP-12 occurrence is based on a reported assay of 0.037 ounce per ton gold over 1.5 m in mafic metavolcanic rock in DDH CP-87-12 (Noramco Explorations 1988). This occurrence appears to be along strike with the CP-8 occurrence, which is located approximately 600 m east-southeast. No diamond-drill hole log is available in the assessment files.

## CP-40

| | |
|---|---|
| *Location:* | UTM Zone 15, 698164E 5708027N<br>[occurrence 237 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000219 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Noramco Explorations (1988) reported that DDH CP-87-40 encountered sulphidized iron formation that assayed up to 0.032 ounce per ton gold. This iron formation is interpreted to be the same iron formation that hosted the Central Patricia No. 1 deposit. Mineralization is reported on the diamond-drill hole log to occur in highly fractured and quartz-veined banded iron formation. The fractures are mineralized with approximately 5% pyrrhotite, 5% pyrite, <0.5% chalcopyrite and trace arsenopyrite. The adjacent mafic metavolcanic rock is reported to be strongly carbonatized, silicified and sheared (i.e., possible major fault zone).

## CP-63 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 698050E 5709015N<br>[occurrence 233 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000218 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence was reported by Noramco Explorations (1988) to be hosted within a laterally continuous northeast-striking banded iron formation unit that has been locally sulphidized and brecciated. Mineralization at this location was reported to include pyrite, pyrrhotite, arsenopyrite and trace sphalerite. The most notable reported assays included 0.03 ounce per ton gold over 0.3 m in DDH CP-88-73 and 0.03 ounce per ton gold over 0.76 m in DDH CP-88-79.

## CP-97

| | |
|---|---|
| *Location:* | UTM Zone 15, 699294E 5707916N<br>[occurrence 238 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000220 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence was reported by Noramco Explorations (1988) to be located in close proximity to the Dona Creek fault. The Dona Creek fault is an 055-striking fault mapped by Pye (1976). An assay of 0.021 ounce per ton gold was reported in a 3 m interval of sulphidized iron formation from DDH CP-88-97 (Noramco Explorations 1988). Mineralization in the gold-bearing interval is reported on the diamond-drill hole log to consist of fine stringers of pyrrhotite and pyrite. Alteration within the mineralized iron formation includes carbonatization and graphite. The adjacent mafic metavolcanic rock is reported to be strongly foliated, carbonatized and silicified.

## DONA PATRICIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 698676E 5706197N<br>[occurrence 241 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence was described by Thomson (1939) as a gold-bearing vein hosted in highly sheared mafic metavolcanic rock and syenite porphyry dikes. Thomson (1939) also indicated that the vein is crosscut by late aplite dikes that were interpreted to be related to the granitic Hooker–Burkoski stock mapped immediately to the east of the occurrence by Pye (1976) and Stott et al. (1989). Mineralization is described by Thomson (1939) as consisting of traces of sulphides within white and pinkish quartz. Dona Patricia Gold Mines reported gold assays of up to 5.84 ounces per ton gold in grab samples and 0.42 ounce per ton gold in character samples collected from 6 quartz stringers (Thunder Bay North Resident Geologist's office mineral deposit file, *Port Arthur News Chronicle* article, December 13, 1939). Pye (1976) reported that follow-up diamond drilling carried out between 1936 and 1946 did not encounter any mineralization of economic interest.

## GATEWAY PATRICIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 695900E 5709000N<br>[occurrence 235 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Ponsford |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers:* | MDI52O08NE00018, MDI52O08NE00040, MDI52O08NE00041, MDI52O08SE00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Pye (1976) described the geology in the area of the Gateway Patricia prospect as being chiefly underlain by mafic metavolcanic rock, with intercalated bands of quartzite, greywacke, and graphitic schist. Gateway Patricia Gold Mines conducted diamond drilling in 1937 and reported encountering anomalous gold mineralization in 5 diamond-drill holes (G-16, G-17, G-19, G-20 and G-21) advanced on claims PA 2188 and PA 2191 (AFRI# 52O08NE0065). Subsequent drilling in the same area by Umex in 1987 confirmed the presence of gold mineralization in 3 holes (KAWA-87-1 and KAWA-87-2 (AFRI# 52O09SE9164); 87-4 (AFRI# 52O09SE9162)). The anomalous gold values occur over a strike length of approximately 1 km in sedimentary horizons logged by Holmes (1937) as siliceous fine-grained sedimentary rock that was occasionally cherty and/or banded. Umex has re-interpreted the mineralized formation(s) as banded silicate-facies iron formation. Based on diamond-drill locations (*see* Umex diamond-drill hole location map in AFRI files listed above), the horizons reported to contain elevated gold values appear to strike approximately west-northwest. Umex diamond-drill hole logs indicate that gold mineralization is hosted within banded silicate-facies iron formation horizons that have been brecciated or cross fractured, contain significant quartz veining, and are mineralized with pyrite and arsenopyrite (up to 10% sulphides). Some pyrrhotite and chalcopyrite mineralization was also reported. The most notable reported assays include 0.15 ounce per ton gold over 0.9 m in Gateway Patricia DDH G-16, 1190 ppb Au over 1.5 m in Umex DDH KAWA-87-1, and 1390 ppb Au over 1.5 m in Umex DDH KAWA-87-4. It is noteworthy that a number of assay results were not included in the assessment file for Umex DDH KAWA-87-1 and KAWA-87-2.

## GATEWAY PATRICIA G-26

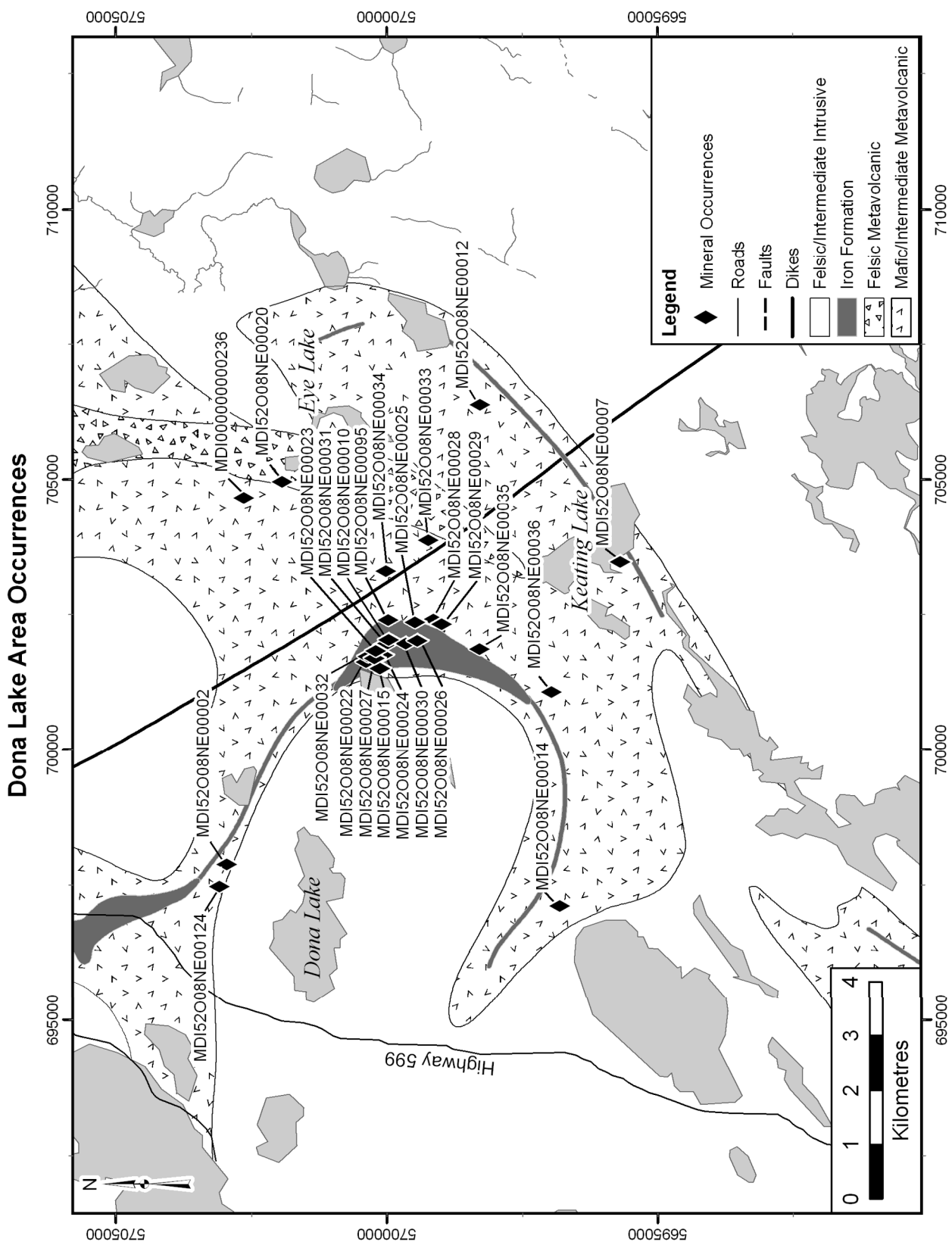
| | |
|---|---|
| *Location:* | UTM Zone 15, 695085E 5709103N<br>[occurrence 234 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Ponsford |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00019 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

In 1937, Gateway Patricia Gold Mines was reported to have encountered anomalous gold mineralization during diamond drilling of DDH G-26, which was advanced on claim PA 3492 (AFRI# 52O08NE0065). The anomalous gold values were reported from material that was logged as banded siliceous sedimentary rock (Hamilton 1937). It is likely that this material is banded silicate-facies iron formation. The gold-bearing horizons were reported to have contained quartz-carbonate veining and disseminated pyrite. This occurrence may be a western extension of the gold mineralized zone at the nearby Gateway Patricia prospect. The most notable reported assay was 0.03 ounce per ton gold over 0.6 m.

## WALKER PATRICIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 698845E 5709791N<br>[occurrence 232 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Pye (1976) indicated that the Walker Patricia property is underlain largely by mafic metavolcanic rock that contains narrow, discontinuous iron formation horizons. Stratigraphy strikes approximately northeast on the western portion of the property, but gradually changes to approximately east toward the eastern end (Pye 1976). Assay results of 0.15 ounce per ton gold over 6.1 m (in iron formation) were reported from a single drill hole advanced on this property in 1937 by Walker Patricia Gold Mines (Thomson 1939). However, Thomson (1946) reported that follow-up drilling by Waltricia Gold Mines at the same location did not reproduce this favourable assay result. Drilling in close proximity to this location in 1985 by Cindy Mae Resources (Tilsley 1985) was reported to have encountered gold values >0.5 g/t Au in samples collected from 2 diamond-drill holes (CM-2-85 and CM-3-85). The anomalous gold values occurred in material logged as brecciated oxide-facies iron formation containing quartz and sulphides. The sulphide minerals included pyrite (up to 8%), arsenopyrite (up to 5%) and chalcopyrite (trace). The occurrence is on the western portion of the property, where stratigraphy strikes northeast, approximately parallel to the course of the Kawinogans River. The most notable assays reported by Tilsley (1985) included 0.83 g/t Au over 0.3 m in CM-3-85 and 0.63 g/t Au over 0.3 m in CM-2-85.




NTS 52 O: Dona Lake area occurrences

# DONA LAKE AREA OCCURRENCES

***Access***: Access to the area is obtained via the Dona Lake Mine Road which connects to Highway 599.

***Exploration History***: *1980–1985*: Geophysical and geological surveys and diamond drilling by Dome Exploration. *1985–1987*: Advanced exploration including sinking of a 176 m exploration shaft by Dome Mines and Campbell Red Lake Mines. *1987–1993*: Mining by Placer Dome. *1993–1994*: Mining by Ross Finlay.

## General Geology

The Dona Lake Mine is located in the southeastern portion of the Pickle Lake greenstone belt and is hosted in supracrustal rocks of the Pickle Crow assemblage (>2860 Ma) (Young 2003). The supracrustal rock sequence that hosts the deposit trends north, and is dominated by tholeiitic (usually pillowed) basalt and amphibolite that contains one major semi-continuous and several discontinuous iron formation units, as well as local horizons of tuff, felsic metavolcanic rock and clastic metasediments (Cohoon 1986). Young (2003) identified numerous gabbro lenses and sills throughout the Dona Lake area that may represent the same units referred to as amphibolite by Cohoon (1986). Cohoon (1986) indicated that the metamorphic grade of the supracrustal rocks is amphibolite facies based on the presence of garnet, biotite, blue-green hornblende and a general lack of chlorite. The supracrustal rocks were intruded to the west by the felsic Ochig Lake pluton (2741 Ma). Numerous felsic dikes, many of which have compositions similar to the Ochig Lake pluton, also intrude the supracrustal rock sequence (Cohoon 1986). Immediately to the east of the mine, Young (2003) identified a separate, younger supracrustal rock assemblage that has been assigned to the Confederation assemblage (circa 2744 Ma). The rocks at the base of this east-facing assemblage are dominated by pillowed mafic volcanic flows that are geochemically distinct from those found in the Pickle Crow assemblage (Young 2003). The Confederation assemblage also contains significant units of intermediate to felsic metavolcanic rocks that include tuff, lapilli tuff and agglomerate.

## Structural Geology

Cohoon (1986) indicated that stratigraphy (and foliation) in the Dona Lake Mine area generally strikes north. However, to the north and south of the mine, these fabrics follow the boundaries of the Ochig Lake pluton, striking northwest to the north and southwest further south. Cohoon (1986) indicated that stratigraphy (and foliation) consistently dip to the east (i.e., away from the intrusion) at approximately 60°. Cohoon (1986) also indicated that stratigraphy faces to the east. Cohoon indicated that the mafic metavolcanic rock is typically most strongly deformed (i.e., schistose and foliated) near the contacts with iron formation. The iron formation units have also been isoclinally folded, with axial planes parallel to stratigraphy (i.e., north strike and steep dip to east). The fold axes plunge steeply to the east. Low-amplitude cross folds with wavelengths of 200 m and amplitudes of 20 m were also noted in the iron formation by Cohoon (1986). The Dona Lake gold deposit occurs at the axis of one of these cross folds. A stratigraphy-parallel shear zone was also noted in the footwall of the deposit by Cohoon (1986). This structure postdates the peak of regional metamorphism, as it is mineralized with chlorite.

## Deposit Geology

The geology of each of the individual deposits is described below.

## DONA LAKE MINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702034E 5699957N<br>[occurrence 244 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Past-Producing Mine with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00010<br>and Discretionary Occurrences (pre-mining exploration drill holes)<br>MDI52O08NE00015, MDI52O08NE00022, MDI52O08NE00023, MDI52O08NE00024, MDI52O08NE00025, MDI52O08NE00026, MDI52O08NE00027, MDI52O08NE00028, MDI52O08NE00029, MDI52O08NE00030, MDI52O08NE00031, MDI52O08NE00032, MDI52O08NE00095 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Dona Lake Mine went into production in 1989 and ceased operations in 1994. During this time period, it is estimated that a total of 939 237 tonnes of ore was milled to produce approximately 6988 kg (246 500 ounces) of gold. This estimate is based on grade and tonnage estimates obtained from *The Northern Miner* (article, May 30, 1994), Janes et al. (1994) and Jen and McCutcheon (1995). The first source summarizes production under the ownership of Placer Dome from 1989 to 1993, and the second and third sources summarize production under the ownership of Ross Finlay from 1993–1994. At the time of mine closure, it is estimated that reserves of approximately 40 000 tonnes grading 5.95 g/t Au remained at depth (*Chronicle-Journal*, article, June 24, 1994).

The geology in the vicinity of the Dona Lake deposit was described by Cohoon (1986) as consisting of tholeiitic basalt flows separated by several major units of iron formation and intruded by felsic dikes and albite porphyry. Stratigraphy strikes north and dips 60° to the east. The gold deposit occurs entirely within 2 iron formation units (possibly a faulted repetition of the same unit) near the easterly plunging axis of a low-amplitude cross fold. The orebody has a strike length of approximately 200 m, with 80% of the reserves located in a 100 m section at the core of the fold where the orebody attained a maximum thickness of approximately 25 m (Cohoon 1986). Dona Lake Gold Mine Ltd. (1993) later indicated that the orebody thickness ranged from 3 to 19 m. The deposit was mined to a total depth of approximately 455 m; additional reserves delineated to a depth of 505 m are believed to have been left in place following mine closure (*The Northern Miner*, article, May 30, 1994). The overall geometry of the orebody is that of a flattened pod that plunges east down the axis of the cross fold (Cohoon 1986). A north-striking sinistral fault was reported to crosscut (at low angle) and offset a portion of the orebody (Cohoon 1986).

The non-mineralized iron formation comprises finely bedded magnetite, chert and hornblende with local grünerite, garnet, calcite and sulphides (Cohoon 1986). The gold mineralized iron formation contains 5 to 15% pyrrhotite and <3% pyrite. The pyrrhotite, which apparently replaces magnetite, is fine grained and wispy and crosscuts the original bedding, which, in some cases, is completely destroyed. Mineralization was also noted by Cohoon (1986) to occur in a portion of the iron formation that is finely fractured and brecciated. This brittle deformation is likely attributable to the same deformation event responsible for the development of the cross fold. The mineralization also includes visible gold and trace chalcopyrite and sphalerite. Cohoon (1986) also indicated that gold values typically are much lower in sections of iron formation where the pyrite concentration exceeds 3 to 4%. This relationship applies even if the pyrrhotite content remains high. Quartz veining is virtually absent from the ore, although the varying quartz content of the iron formation indicates the possibility of silicification. There is no evidence of significant silicification of the adjacent mafic metavolcanic rock (Cohoon 1986).

During a site visit conducted by the author, evidence of a significant northwest-striking structure was observed in the vicinity of the mine portal. In this area, the primary tectonic fabrics of the mafic metavolcanic rock and iron formation ($S_1$) are crosscut by a later ($S_2$) schistosity that is axial planar to small-scale folds of the $S_1$ fabric. The approximate orientation of the $S_2$ fabric ranges from 130 to 145, with near-vertical dip. The fold hinges generally plunge toward the southeast at approximately 45°. The $S_2$ fabric at this location is likely to be related to the major northwest-striking shear zone mapped in this area by Stott et al. (1989).

## DONA LAKE 5

| | |
|---|---|
| *Location:* | UTM Zone 15, 697108E 5696795N [occurrence 248 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00014 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on 2 anomalous gold assays reported in Dome Exploration DDH 172-7 (AFRI# 52O09NW0010). The anomalous gold values were reported within 22 m of top of the borehole from basalt containing quartz veins mineralized with pyrrhotite (up to 5%) and pyrite (up to 3%). The upper 25 m of the drill-hole section was dominated by basalt. The mafic metavolcanic rock is underlain to the southwest by an iron formation that was intersected over a length of approximately 62 m. This iron formation is, in turn, underlain by mafic metavolcanic rock to the southwest. No notable gold assays were reported from the iron formation. The most notable reported assay was 7.89 g/t Au over 0.5 m.

A nearby outcrop located at UTM Zone 15, 697479E 5696491N was observed by the author to contain a layer of contorted banded iron formation hosted within mafic metavolcanic rock. A sample of sulphidized iron formation collected from this location assayed less than 0.01 ounce per ton gold.

## DONA LAKE 23

| | |
|---|---|
| *Location:* | UTM Zone 15, 703882E 5699227N [occurrence 246 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00033 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on a number of anomalous gold assays reported in Dome Exploration DDH 172-134 (AFRI# 52O08NE0054). The dominant lithologies recorded on the drill-hole log were felsic metavolcanic rock described as rhyolite tuff and rhyolite lapilli tuff agglomerate. Gold assays exceeding 1.0 g/t Au were reported in massive pyrite (2 assays) and rhyolite tuff (3 assays). The mineralized sections of rhyolite tuff were reported to be associated with iron formation material and contained pyrite (up to 10%), pyrrhotite (1%) and minor magnetite. The most significant reported assay was 5.48 g/t Au over 1.0 m in rhyolite tuff.

## DONA LAKE 24

| | |
|---|---|
| *Location:* | UTM Zone 15, 703309E 5700008N<br>[occurrence 245 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00034 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on anomalous gold assays reported in Dome Exploration DDH 172-133 (AFRI# 52O08NE0054). The dominant lithology recorded on the drill-hole log was intermediate tuff, with some basalt tuff, albite porphyry and massive pyrite. Two gold assays exceeding 1.0 g/t Au were reported in a section logged as massive pyrite. The mineralized massive pyrite unit was logged across an approximately 7 m wide section and was reported to contain 5% pyrrhotite and 10% quartz/rhyolite. The most significant reported assay was 6.85 g/t Au over 1.0 m.

## DONA LAKE 25

| | |
|---|---|
| *Location:* | UTM Zone 15, 701869E 5698280N<br>[occurrence 247 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00035 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on an anomalous gold assay reported in Dome Exploration DDH 172-142 (AFRI# 52O08NE0054). The anomalous gold value occurs near the top of an approximately 40 m wide section of iron formation. This iron formation unit is crosscut in 2 locations by albite porphyry and has been described as being underlain to the northwest by intermediate tuff. The gold mineralization is reported in chert amphibole iron formation with 3% pyrite, and minor garnet and graphite. The most notable reported assay was 1.37 g/t Au over 1.0 m.

## DONA LAKE 26

| | |
|---|---|
| *Location:* | UTM Zone 15, 701070E 5696949N [occurrence 249 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00036 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on 2 anomalous gold assays reported in Dome Exploration DDH 172-142 (AFRI# 52O08NE0054). The anomalous gold values occur in 2 sections of iron formation that are separated by approximately 17 m of albite porphyry and rhyolite tuff. These lithologies are underlain to the northwest by intermediate to mafic metavolcanic rocks and amphibolite. The gold mineralization is reported in material logged as sulphidized iron formation with the upper intersection containing 15% pyrite, and the lower section containing 3% pyrrhotite and trace pyrite and chalcopyrite. The most notable reported assay was 4.8 g/t Au over 1.05 m.

## Geology and Occurrences of the Eye Lake Area (Near Dona Lake)

***Access***: Access to the area is obtained via the Dona Lake Mine Road which connects to Highway 599.

***Exploration History***: *1984–1988*: Geophysical and geological surveys and diamond drilling by Van Horne Gold Exploration and Power Explorations.

## General Geology and Structural Geology

The supracrustal rocks of the southeastern portion of the Pickle Lake greenstone belt were classified by Young (2003) as being part of the Confederation assemblage (circa 2744 Ma). The rocks at the base of this east-facing assemblage are dominated by pillowed mafic volcanic flows that are geochemically distinct from those found further to the west in the Pickle Crow assemblage (Young 2003). The Confederation assemblage also contains significant units of intermediate to felsic metavolcanic rocks that include tuff, lapilli tuff and agglomerate.

The Eye Lake gold occurrences are located within an approximately north- to north-northeast-striking metavolcanic rock sequence that is dominated by mafic metavolcanic flows to the west and by intermediate to felsic metavolcanic rocks (dacitic to andesitic pyroclastics and flows) to the east (Fogal and Higginson 1988). Foliation is approximately parallel to stratigraphy and was mapped by Fogal and Higginson (1988) as generally having near-vertical dip. A thick unit of banded biotite-quartz to hornblende-quartz gneiss has also been identified in the area east of these occurrences. The contact between the gneiss and metavolcanic rock was interpreted by Fogal and Higginson (1988) as an approximately north-northeast-striking fault. This fault also has a close spatial association with the Eye Lake gold occurrences.

## Deposit Geology

The geology of each of the individual deposits is described below.

## EYE LAKE (DONA LAKE 11)

| | |
|---|---|
| *Location:* | UTM Zone 15, 704973E 5701931N<br>[occurrence 252 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00020 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

The Eye Lake prospect was initially described by North (1984) as an approximately 60 cm wide sulphide zone that occurs in sheared intermediate metavolcanic rock. Grab samples from this zone returned gold assays of 0.206 and 0.093 ounce per ton gold. A nearby shear zone containing quartz-tourmaline veining was also reported by North (1984) to contain anomalous gold values. Follow-up sampling in an area immediately north of the original occurrence by Fogal and Higginson (1988) identified additional mineralization (assays up to 630 ppb Au) at locations with quartz-carbonate veining and limonitic staining. Diamond drilling of this zone by Power Explorations was reported by Fogal and Higginson (1988) to have encountered anomalous gold mineralization (i.e., >0.02 ounce per ton gold) in 3 diamond-drill holes (EL-87-2, EL-87-3 and EL-87-4). Gold mineralization in EL-87-2 was reported to occur in intermediate flows containing quartz-carbonate stringers, whereas gold mineralization in the other 2 holes was reported to be associated with pyrrhotite, pyrite and chalcopyrite mineralization in intermediate to felsic tuff. The most notable reported assays included 0.02 ounce per ton gold over 1.5 m in DDH EL-87-2, 0.024 ounce per ton gold over 1.5 m in DDH EL-87-4, and 0.026 ounce per ton gold over 1 m in DDH EL-87-3.

## EYE LAKE NORTH

| | |
|---|---|
| *Location:* | UTM Zone 15, 704673E 5702633N<br>[occurrence 253 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000236 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

The Eye Lake North occurrence is based on reports of anomalous gold mineralization in mafic to intermediate metavolcanic rocks containing pyrite and pyrrhotite mineralized quartz-carbonate veins (Fogal and Higginson 1988). Mineralization at this location has been reported in outcrop and from diamond drilling, with the most notable assays including 1220 ppb Au from a surface grab sample and 0.024 ounce per ton gold over 0.6 m in DDH EL-87-5.

## Geology and Occurrences of the Fault Creek Area (Near Dona Lake)

***Access***: Occurrences are in close proximity to Highway 599.

***Exploration History***: *1945–1948*: Prospecting, geological and geophysical surveys and diamond drilling by Central Patricia Gold Mines. *1983–1984*: Geophysical and geological surveys and diamond drilling by Moss Resources. *2003*: Geological compilation by Clark Exploration Consulting for King's Bay Gold.

### General Geology

The Fault Creek occurrences are located in supracrustal rocks of the Pickle Lake greenstone belt. These rocks were classified by Young (2003) as being part of the Pickle Crow assemblage (>2860 Ma). The supracrustal rocks form a narrow northwest-striking belt that is bounded to the southwest by granitic rocks of the Ochig Lake pluton, and to the northwest by granitic rocks of the Hooker–Burkoski stock. The supracrustal rock sequence is dominated by pillowed and massive mafic metavolcanic flows that contain narrow, continuous bands of oxide-facies iron formation and volcaniclastic rock (North 1984). The largest iron formation unit was reported by North (1984) to range in thickness from approximately 30 to 90 m.

### Structural Geology

Mapping by Stott et al. (1989) indicated that stratigraphy and foliations in this area are subparallel and generally strike northwest and dip moderately to steeply to the northeast. Stott (1996) also indicated that the rocks in the supracrustal wedge between the Ochig Lake pluton and Hooker–Burkoski stock contain a number of narrow ductile shear zones within strain aureoles imposed during emplacement of these late tectonic to posttectonic intrusions.

### Deposit Geology

The geology of each of the individual deposits is described below.

### MASAKAYASH

| | |
|---|---|
| *Location:* | UTM Zone 15, 697876E 5702949N<br>[occurrence 242 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00124 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

North (1984) reported that this showing occurs within a unit of sheared and altered oxide-facies iron formation that is hosted within mafic metavolcanic rock. The mineralized iron formation unit strikes approximately northwest, and was intruded by a narrow quartz porphyry intrusion that is subparallel to stratigraphy. The mineralized horizon is sulphidized, contains chloritic schist, and was reported by North (1984) to have assayed up to 0.465 ounce per ton gold over 0.25 m. Pye (1976) reported that assay values of up to 0.40 ounce per ton gold over 30 cm were obtained from surface samples collected from this showing in 1945 by Central Patricia Gold Mines.

## WRIGHT, D.

| | |
|---|---|
| *Location:* | UTM Zone 15, 697464E 5703087N<br>[occurrence 243 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00002 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Pye (1976) described this showing as being hosted within a 1.5 m wide quartz vein that is located at the contact between sheared and contorted mafic metavolcanic rock and quartz porphyry. The vein strikes north and consists of glassy white quartz mineralized with minor pyrite. Seams and stringers of quartz and local disseminated pyrite have also been reported within the porphyry intrusion. Central Patricia Gold Mines (1945) indicated that the most favourable assay reported from this occurrence was 0.41 ounce per ton gold for a specimen collected by D. Wright. However, the best assay obtained during subsequent sampling by Central Patricia Gold Mines was 0.03 ounce per ton gold.

## Geology and Occurrences of the Keating Lake Area (Near Dona Lake)

***Access***: Occurrences are located within 5 km of the Dona Lake Mine Road.

***Exploration History***: *1960*: Airborne geophysical surveys, geological survey and prospecting by Monpre Mining Company. *1967*: Diamond drilling by N. Firth.

## General Geology and Structural Geology

The supracrustal rocks of the southeastern portion of the Pickle Lake greenstone belt were classified by Young (2003) as being part of the Confederation assemblage (circa 2744 Ma). The rocks at the base of this east-facing assemblage are dominated by pillowed mafic volcanic flows that are geochemically distinct from those found further to the west in the Pickle Crow assemblage (Young 2003). The Confederation assemblage also contains significant units of intermediate to felsic metavolcanic rocks that include tuff, lapilli tuff and agglomerate. The supracrustal rocks are bounded to the southeast by granitic rocks of the Quarrier tonalite gneiss domain (Stott 1996).

Mapping in this area by Stott et al. (1989) indicated that the dominant lithology is mafic metavolcanic rock, with subordinate amounts of intermediate to felsic metavolcanic rocks. A geophysically inferred iron formation has also been mapped in the area. Stratigraphy and foliation generally strike northeast with steep (generally approximately 80°) northwesterly dip.

## Deposit Geology

The geology of each of the individual deposits is described below.

## FIRTH (DONA LAKE 1)

| | |
|---|---|
| *Location:* | UTM Zone 15, 706397E 5698276N [occurrence 251 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Cu, Zn |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52O08NE00012 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

This discretionary occurrence is based on the reported occurrence of significant sulphide mineralization in 4 diamond-drill holes (67-1, 67-2, 67-3A and 67-4) advanced in this area by N. Firth in 1967 (AFRI# 52O08NE9345). Assay results from these diamond-drill holes were reported to contain sub-economic concentrations of copper, zinc and nickel. Diamond-drill hole logs indicate the presence of significant pyrrhotite and/or pyrite mineralization (i.e., massive to semi-massive sections) within the mineralized rhyolite horizon. Chalcopyrite and sphalerite were also noted in a number of mineralized intervals that also contained anomalous copper and zinc assays (up to 0.16% Cu and 0.41% Zn). Silicification and graphite are also reported in some of the sulphide mineralized sections.

## SEAHORSE LAKE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703482E 5695684N [occurrence 250 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township Area:* | Dona Lake Area |
| *Commodities:* | Au |
| *Status:* | Discretionary Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

Monpre Mining Company reported anomalous gold mineralization at this location following a geophysical surveying and ground prospecting program carried out in 1960 (Grady 1960). The occurrence is reported to be located in a northeast-striking shear zone that is mineralized with massive and disseminated pyrite. Lithologies that were noted in the area by Grady (1960) include andesite, greywacke, quartzite and amphibolite. An assay of 0.02 ounce per ton gold is reported to have been obtained from a 1.5 m drill intersection at this location (Thunder Bay North Resident Geologist's office, mineral deposit file # TB 52O08NE–Seahorse Lake (Keating Lake) occurrence).

# PICKLE CROW AREA OCCURRENCES

***Access***: Road access to the area is obtained via the Pickle Crow Mine Road that connects to Highway 599.

***Exploration and Development History***: Exploration history for the Pickle Crow area is referenced to historic properties referenced in Pye (1976).

**Pickle Crow Property**: *1928*: No. 1 vein discovered by J. MacFarlane and H.H. Howell. *1928–1930*: Trenching and diamond drilling by Northern Arial Minerals. *1933*: Shaft sunk on property by Northern Arial Minerals. *1934*: Pickle Crow Gold Mines is incorporated. *1935–1966*: Producing mine. *1981–1984*: Surface exploration and diamond drilling by Golden Shadow Resources and Gallant Gold Mines. *1985–1988*: Diamond drilling, geophysics, outcrop stripping and geological mapping by Noramco Mining Corporation. *1988–1990*: Partial feasibility study for underground mining by Noramco and Brampton Mining Services. *1999*: Property acquired by Wolfden Resources. *1999–2000*: Bulk sampling by Cantera Mines. *2006*: Wolfden Resources constructed a 225 ton per day mill on the site to process 403 800 tonnes of ore outlined in crown pillar areas of the No. 1 vein system.

**Central Patricia Properties**: *1929*: Trenching of No. 6 vein on Springer claims. *1938–1940*: Production of 13 158 ounces of gold from 18 886 tons of milled ore from Central Patricia No. 2 shaft. *1980–1986*: Geological, geophysical and geochemical surveys and diamond drilling by Golden Shadow Resources. *1986–1989*: Geological, geophysical and geochemical surveys and diamond drilling by Noramco Explorations for Quinterra Resources and Pure Gold Resources. *2003–2006*: Geological surveys and diamond drilling by King's Bay Gold and Richview Resources.

**Kaw–Crow Patricia Property**: *1936*: Geophysical survey by H. Lundberg. *1936–1941*: Surface prospecting and diamond drilling by Kaw–Crow Patricia Gold Mines. *1972*: Geological mapping an prospecting by Transterre Exploration. *1974*: VLF survey by Goldsearch. *1980–1986*: Geophysical, geochemical, geological surveys and diamond drilling by Marietta Resource Corporation.

## General Geology

The rocks of Pickle Crow Mine area are dominated by mafic metavolcanic rock of basaltic composition (MacQueen 1987). This metavolcanic rock is intercalated with banded iron formation, gabbro and porphyry sills (McGregor 1993), whereas a thick succession of felsic to intermediate volcanic rocks occurs in the southeast portion of the property (MacQueen 1987). All of these rocks are crosscut in the mine area by biotite lamprophyre and felsic dikes; granitic rocks of the Hooker–Burkoski stock occur to the southwest. Proterozoic diabase dikes crosscut all lithologies.

Stott (1996) described the mafic metavolcanic rock of the Pickle Crow area as typically pillowed flows that have been extensively carbonatized and strongly deformed. The quartz feldspar porphyry sills that intrude the mafic metavolcanic rock were described by Stott (1996) as lenticular bodies containing 3 to 5 mm quartz and feldspar phenocrysts within a fine- to medium-grained matrix. These intrusions generally conform to schistosity, and are often strongly sheared. The iron formation units were described by Stott (1996) as magnetite-chert iron formation with interbedded greenish mudstone and local graphitic schist. The mudstone and graphitic schist interbeds are extensively ferroan dolomitized in the vicinity of Central Patricia and Pickle Crow (Stott 1996). This alteration has been noted to be spatially associated with the carbonatized mafic metavolcanic rock. The felsic to intermediate volcanic unit to the southeast was described by Stott (1996) as a lenticular, 2.6 m wide body of rhyodacitic to dacitic tuff and lapilli tuff to tuff breccia. The Hooker–Burkoski stock is a quartz-phyric, biotite, sodic trondhjemite (Stott 1996).

Young (2003) subdivided the supracrustal rocks of the Pickle Crow area into 2 distinct tectonic assemblages. The mafic metavolcanic-dominated sequence to the northwest was assigned to the Pickle Crow assemblage (>2860 Ma), whereas rocks to the southeast that include the intermediate fragmental units were assigned to the Confederation assemblage (<2741 Ma). The approximate age of the Pickle Crow assemblage was inferred from a U/Pb age determination circa 2860 Ma obtained from a quartz porphyry sill in this area (Stott 1996). The base of the southeast-facing Confederation assemblage was interpreted by Young (2003) to unconformably overlie the northwest-facing Pickle Crow assemblage immediately to the east of the former No. 1 shaft, with the base of this assemblage considered to be a unit of fragmental volcanic rock. A dacitic lapilli tuff from this assemblage, located immediately south of the Pickle Crow area, provided a U/Pb age circa 2729 Ma (Young 2003).

## Structural Geology

The dominant structural feature of the Pickle Crow area is a broad northeast-trending zone containing numerous shear zones and areas of extensive carbonatization (Stott 1996). Gold mineralization is commonly associated with these individual shear zones.

On the Pickle Crow property, MacQueen (1987) noted 4 distinct generations of deformation. The earliest structures ($D_1$) are rarely observed isoclinal folds that have been refolded by a second, more easily observed ($D_2$) deformation event. The $D_2$ deformation is represented by a northeast-striking penetrative axial planar schistosity ($S_2$) that is subparallel to stratigraphy and dips steeply (75 to 87°) to the northwest. The $D_2$ schistosity is axial planar to $F_2$ folds that are outlined by banded iron formations and reversals in younging indicators in the pillowed volcanic flows. The $F_2$ folds that have been identified in the area include the Pickle Crow anticline, Pickle Crow syncline, Sawmill anticline and Powder House anticline.

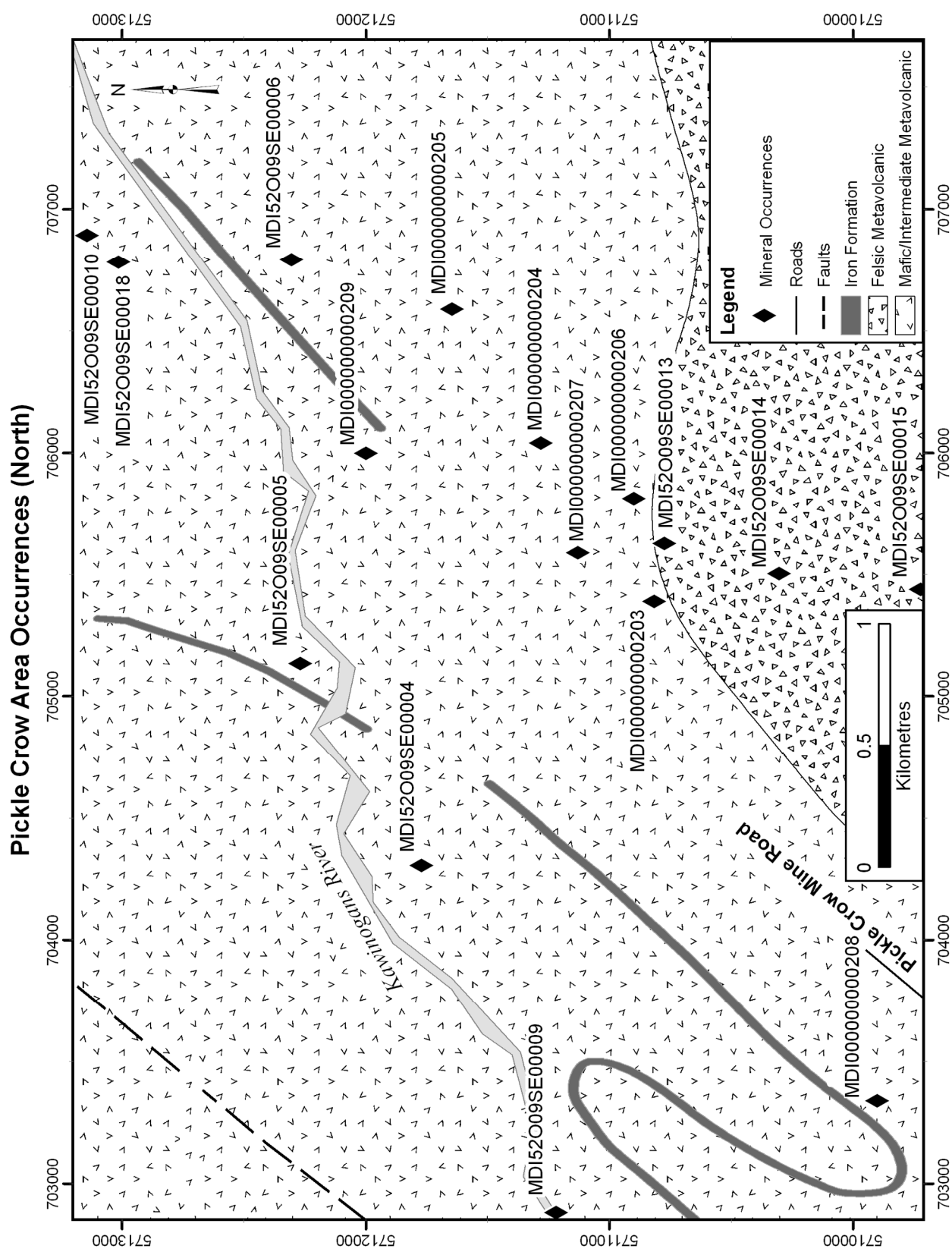
Two distinct sets of $D_2$ shear zones were noted by MacQueen (1987). These include Type 1 shears that are parallel to $S_2$ surfaces, and discrete Type 2 shear zones that splay off the Type 1 shears. The Type 1 shears were described by MacQueen (1987) as northeast-striking strongly foliated zones greater than 30 m wide that dip steeply (75 to 85) to the northwest. Type 1 shear zones identified in the Pickle Crow area include the Pickle Crow fault, Highland Crow shear zone, Pumphouse shear zone and Powderhouse shear zone. The Type 2 shears strike east-northeast, and were described by Stott (1986) and Stott and Brown (1986) as shear zones formed at a low angle (typically 15°) to the principal flattening schistosity (i.e., $S_2$). Stott (1986) and Stott and Brown (1986) also noted that these shears commonly contain asymmetrically folded quartz veins, the orientations of which are consistent with rotation toward the flattening plane during a major shortening event. MacQueen indicated that the most significant gold-bearing quartz veins and iron formation sulphide replacement zones in the Pickle Crow area occur within the Type 2 shears (e.g., the No. 1, No. 2 and No. 5 veins) spatially associated with the Pickle Crow fault and/or Highland Crow shear zone.

A third generation of structures ($D_3$) that was recognized by MacQueen included northwest-striking and northerly striking conjugate faults. The $D_3$ faults crosscut and displace earlier structures, and typically dip steeply to the northeast. These late structures commonly host undeformed veins, felsic dikes and lamprophyre dikes.

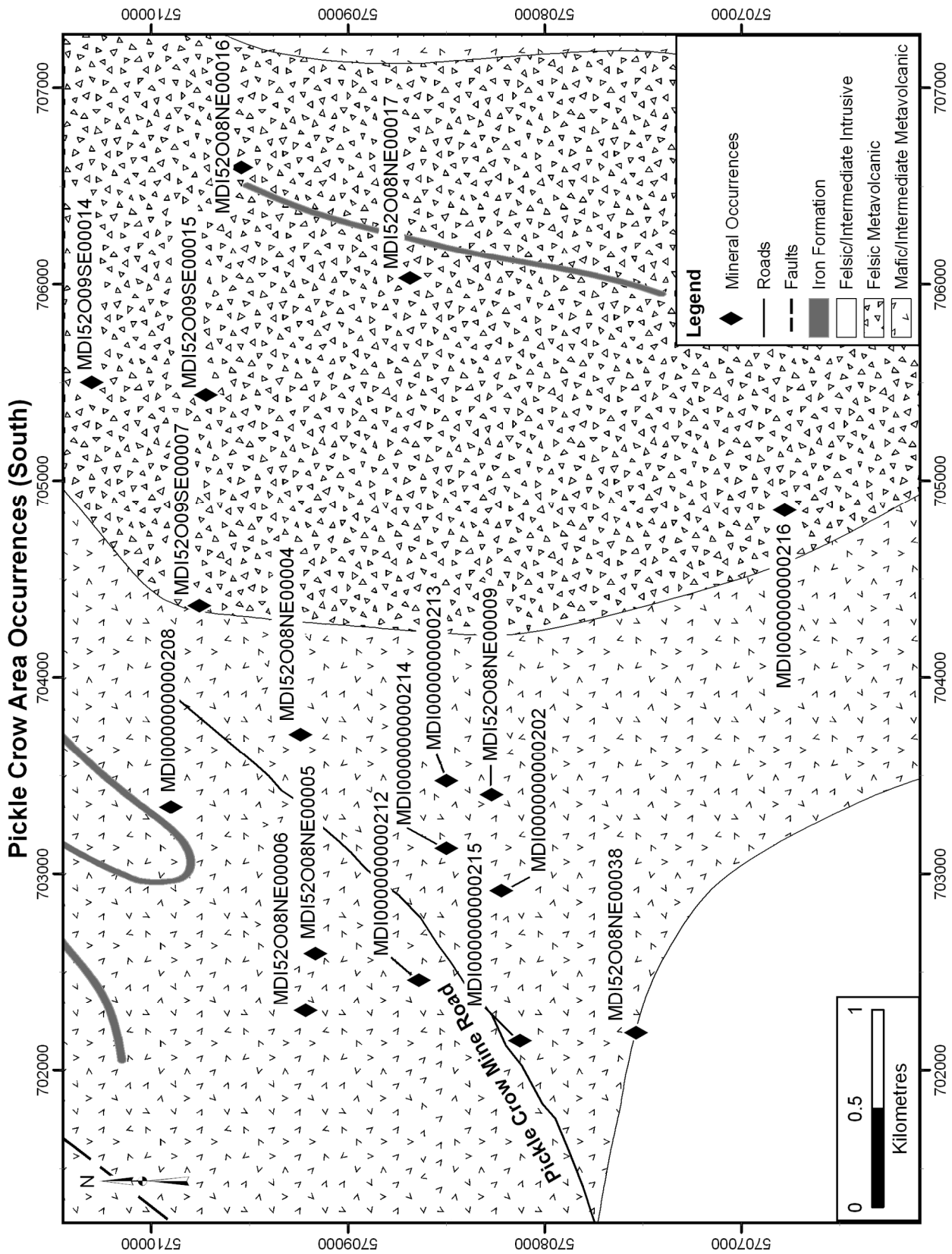
A final generation of structures ($D_4$) was indicated by MacQueen (1987) to be represented by northwest-striking *en échelon* extensional fractures that host diabase dikes.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 52 O: Pickle Crow area occurrences (north)




NTS 52 O: Pickle Crow area occurrences (south)

## ABC ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 705814E 5710900N<br>[occurrence 273 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000206 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The ABC zone was described by McGregor (1989) as an area of complex mineralization in mafic metavolcanic rock and narrow iron formations. Mineralization is characterized by a wide zone of fracturing, brecciation, silicification and porphyry dikes (Winter 1987). The results of trenching reported by Winter (1987) identified 2 mineralized zones and included assay results of 0.10 ounce per ton gold over 20 m and 0.05 ounce per ton gold over 6.1 m. Diamond drilling carried out in the 1950s by Pickle Crow Gold Mines and in the 1980s by Highland Crow Resources returned numerous gold assay results that indicate that this mineralized zone plunges to the east and is open to depth (Winter 1987).

## ALBANY PORPHYRY ZONE (NO. 17 AND 18 VEINS)

| | |
|---|---|
| *Location:* | UTM Zone 15, 706042E 5711281N<br>[occurrence 275 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000204 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Albany Porphyry zone encompasses a large area containing numerous narrow, gold-bearing quartz veins, including the No. 17 and 18 vein systems (MacGregor 1989).

The No. 17 and 18 veins are 2 east-northeast-striking veins that are exposed at surface approximately 150 to 250 m west of the Albany shaft. McGregor (1989) indicated that the No. 17 vein consists of a system of narrow veins covering a strike length of at least 120 m. Grab samples collected by Noramco from this zone assayed up to 1.25 ounces per ton gold, and chip samples collected across the zone averaged 0.19 ounce per ton gold over a strike length of 33 m (McGregor 1989). The best diamond-drill intersection for this zone reported by McGregor (1989) was 0.13 ounce per ton gold over 2.9 m. The No. 18 vein was reported by McGregor (1989) to have an indicated grade of 0.13 ounce per ton gold. The No. 17 and 18 vein systems are located along strike from the No. 8 vein. No reserve estimates were provided for these veins by McGregor (1989). Note that the No. 17 vein of McGregor (1989) appears to be the equivalent of the E-Zone of Pye (1976).

The author observed a large stripped area dominated by quartz-feldspar porphyry (intruding banded iron formation) at UTM Zone 15, 706037E 5711363N. The porphyry intrusion is crosscut by a long (>40 m exposed length), contorted quartz vein. This vein is milky-white, has a general orientation of 075, and ranges in width from approximately 2 to 30 cm wide. This vein is folded near the eastern end of the exposure, exhibiting Z-asymmetry. A grab sample of quartz vein material from this location assayed <0.01 ounce per ton gold.

## BIG DOME VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 702596E 5709167N<br>[occurrence 263 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Big Dome vein system was reported by Pye (1976) to consist of contorted quartz veins and patches that strike approximately northerly through schistose metavolcanic rock. The most favourable assay reported from surface sampling (sampling method not provided) of this vein was 0.4 ounce per ton gold over 1.42 m (Pye 1976).

## CENTRAL PATRICIA NO. 2 MINE / SPRINGER SHAFT / NO. 6 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703404E 5708271N<br>[occurrence 258 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Past-Producing Mine with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00009 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The No. 6 (McCallum) vein was previously mined by Central Patricia Gold Mines via the Springer Shaft during the late 1930s (Noramco Explorations 1988). The vein was described by Pye (1976) as having an average orientation of approximately 255/65-70. However, the vein was also reported to be highly contorted, with numerous Z-shaped folds. The vein pinches and swells significantly over short distances (thickness varies from a few centimetres to metre-scale), having an average with of slightly over 30 cm (Pye 1976). Total gold production from the No. 6 vein deposit was 13 158 ounces from 18 886 tons of milled ore (Ferguson, Groen and Haynes 1971). The vein was described by Pye (1976) as consisting of white quartz containing some tourmaline, chlorite and carbonate, mineralized with subordinate amounts of pyrite, pyrrhotite and arsenopyrite. Visible gold occurs in fractures in the quartz, associated with ribbons of chlorite and tourmaline, and in fractures in pyrite and arsenopyrite.

During the late 1980s, Noramco Explorations (1988) identified significant gold mineralization in quartz veins and sulphidized iron formation in close proximity to the Springer shaft area. Assays from Noramco diamond-drill holes CP-87-23, CP-87-57, CP-87-72 and CP-87-92 reportedly defined a significant zone of gold mineralization in iron formation over a minimum strike length of 120 m. McGregor (1993) subsequently estimated open pit reserves of 1000 tons grading 0.70 ounce per ton gold in the No. 6 vein, and 4000 tons grading 0.16 to 0.20 ounce per ton gold in the No. 6 iron formation.

## CENTRAL PATRICIA NORTHEAST CLAIMS

| | |
|---|---|
| *Location:* | UTM Zone 15, 706000E 5712000N<br>[occurrence 279 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000209 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Northeast Claims prospect is located on a property known as the Central Patricia Northeast Claims. Anomalous gold mineralization was encountered during diamond drilling of 4 holes that were advanced on these claims by Noramco Explorations in 1988 (Noramco Explorations 1988). The gold was reported to occur within altered and deformed banded iron formation. The most significant mineralization is interpreted to occur at the nose of a drag fold that was interpreted to be a tight synform whose axis plunges to the northeast at 65° (Noramco Explorations 1988). The most significant assay results were obtained from DDH CP-88-81, which intersected 30 m of strongly silicified and mineralized iron formation: a quartz-flooded zone in the iron formation was reported to have assayed 0.101 ounce per ton gold over 4.1 m, with a high-grade intersection of 0.362 ounce per ton gold over 1.07 m in a portion of the zone containing 50% quartz veins and 30% pyrrhotite (Noramco Explorations 1988).

## COHEN–MacARTHUR

| | |
|---|---|
| *Location:* | UTM Zone 15, 704306E 5711772N<br>[occurrence 277 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE0004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Two zones of gold mineralization were described by Pye (1976) on the former Cohen–MacArthur Group claims. The showing locations were illustrated by Thomson (1939, *see* Figure 12). The original (eastern) showing is located on the eastern boundary of claim PA 773, approximately 90 m north of the No. 2 post. This occurrence is hosted in mafic metavolcanic rock and was described by Pye (1976) as consisting of narrow east-striking shear zones containing silicified schist. The shears contain quartz veins and stringers that are up to 0.4 m wide. The quartz is white and mineralized with small quantities of carbonate, chlorite, tourmaline, arsenopyrite, pyrite and chalcopyrite. Visible gold was also reported. Thomson (1939) reported an assay of 0.26 ounce per ton gold over 2.16 m in a surface trench; and assays of up to 0.25 ounce per ton gold over 0.4 m were reported from diamond drilling carried out at this location in 1936 (Pye 1976). The second gold showing is located approximately 370 m to the southwest on claim PA 774. The showing is located in mafic metavolcanic rock, immediately north of a zone of strong silicification and carbonatization. This outcrop of this alteration zone was reported by Pye (1976) to have weathered to a reddish-brown colour due to the presence of iron carbonate minerals. Mineralization was reported by Thomson (1939) to be hosted in a number of shear zones that contain irregular quartz veins and stringers. The quartz veins were reported to contain carbonate, albite, and seams of chlorite and tourmaline, and are mineralized with arsenopyrite and visible gold. Mapping of the 2 showings by Thomson (1939) indicated that foliation in the area strikes

approximately east-northeast, with steep northerly dip (65 to 80). Pye (1976) reported that diamond drilling of the southwest showing in the 1930s obtained assay results of up to 0.75 ounce per ton gold over 1.72 m and 3.59 ounces per ton gold over 0.35 m.

## CP-42 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702190E 5707535N<br>[occurrence 255 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00038 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The CP-42 zone was reported by Noramco Explorations (1988) to be located on the north flank of the Hooker–Burkoski stock. Lithologies in this area include silicified tuff, sheared feldspar porphyry and minor amounts of sulphidized banded oxide-facies iron formation and mafic metavolcanic flows. An assay of 0.04 ounce per ton gold has been reported from a 0.76 m section of sheared and quartz-carbonate flooded volcanic rock in DDH CP-88-42. Similar mineralization (0.06 ounce per ton gold over 1.43 m in sheared and altered intermediate tuff breccia) was reported in a nearby diamond-drill hole (CPE-5) advanced in this area in 1984 by North American Mining Exploration Ltd. (1985).

## CROWSHORE PATRICIA

| | |
|---|---|
| *Location:* | UTM Zone 15, 706793E 5712305N<br>[occurrence 280 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Developed Prospect without Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This prospect includes 3 areas of significant gold mineralization referred to as the A-, B- and C-zones by Pye (1976). The mineralized structures were reported by Pye (1976) to generally strike 030, while dipping steeply to the northwest. Lower values of gold mineralization were reported in 3 other structures on the property referred to as the D-, E- and G-zones (Pye 1976). Although no production has been reported from this prospect, an exploration shaft was sunk on the property by Crowshore Patricia Gold Mines in 1945.

The A-Zone mineralization is located approximately 250 m southwest of the Crowshore Patricia shaft (Pye 1975). Pye (1976) reported this zone to be associated with sulphidized oxide-facies iron formation (pyrite and pyrrhotite) and mineralized quartz stringers that fill transverse fractures. Pye (1976) reported that gold is erratically distributed in the A-Zone, with portions of the structure containing high-grade material (up to 0.74 ounce per ton gold over 0.45 m), and others barren of gold.

The B-Zone (located by Pye (1975) approximately 200 m southeast of the shaft) is a narrow, approximately 730 m long mineralized structure that was indicated by Pye (1976) to be characterized by

intense shearing of mafic metavolcanic rocks. This shear is immediately adjacent and parallel to an iron formation unit that hosts the gold mineralization. Mineralization in the B-Zone is reported to include iron formation sulphide replacement (pyrrhotite), and quartz veins in fractured iron formation. Numerous anomalous assay values were reported by Pye (1976) for diamond drilling carried out by Crowshore Patricia Gold Mines in 1947, with the most favourable result being 0.22 ounce per ton gold over 0.97 m in DDH 17. A narrow mineralized shear in mafic metavolcanic rock, approximately 30 m north of the B-Zone, was reported by Pye (1976) to contain irregular gold mineralized quartz lenses (up to 0.14 ounce per ton gold over 0.3 m).

The C-Zone is located immediately southwest of the shaft, and was reported by Pye (1976) to consist of highly contorted quartz veins and stringers up to 60 cm wide. The quartz veins are hosted within a shear zone hosted within mafic metavolcanic rock. The shear zone varies in width from 0.9 to 8.2 m, averaging approximately 2.1 m (Pye 1976). The veins are reported to be mineralized with trace quantities of pyrite, pyrrhotite, chalcopyrite, carbonate and tourmaline, with occasional visible gold. Assay values of up to 2.93 ounces per ton gold over 0.9 m were reported from channel samples collected from this zone by Crowshore Patricia Gold Mines in 1944 (Pye 1976).

## CROWSHORE PATRICIA A-2

| | |
|---|---|
| *Location:* | UTM Zone 15, 706894E 5713145N<br>[occurrence 282 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00010 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The A-2 occurrence is based on the reported intersection of anomalous gold values in 2 diamond-drill holes (A-1 and A-2) drilled at this location by Crowshore Patricia Gold Mines in 1948. The diamond-drill hole logs indicate that the anomalous gold values occurred in sulphidized chert-magnetite iron formation (AFRI# 52O09SE0404). The most favourable reported assay was 0.18 ounce per ton gold over 0.37 m from DDH A-2. An anomalous assay of 4.08 g/t Au was reported from a diamond-drill hole (249-1) advanced in the same area by Dome Exploration in 1985 (MDI52O09SE00019: MDI discretionary occurrence Tarp Lake #12). However, a second analysis of this sample only returned trace quantities of gold.

## D-ZONE EAST AND SIGMOID VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 706591E 5711647N<br>[occurrence 276 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000205, MDI52O09SE00012 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Winter (1987) indicated that Pickle Crow Gold Mines outlined 3 well-defined east- to northeast-trending structures to the northeast of the Albany shaft (D Zone, D-Zone East and Sigmoid vein). These structures are up to 600 m long structures and were reported by Winter (1987) to contain gold-bearing quartz veins that returned assay values in the 0.1 to 0.5 ounce per ton gold range from surface samples. Diamond drilling by Gallant Gold Mines in 1981 (Hodge 1981a) identified a gold mineralized zone east of the No. 15 vein of McGregor (1989) that is referred to as D-Zone East (note that Hodge (1981a) refers to the No. 15 vein as the D-Zone). The Sigmoid vein is, in turn, located further to the east, between D-Zone East and the Crowshore Patricia C-Zone. Hodge (1981a) suggests that the No. 15 vein (D-Zone), Sigmoid vein and Crowshore Patricia C-Zone are all part of the same quartz vein system. The D-Zone quartz vein was described by Hodge (1981a) as a massive quartz vein that contains minor carbonate, with or without sulphides. Visible gold has been noted at several locations in this vein system.

A stripped outcrop exposure located at UTM Zone 15, 706549E 5711939N was observed by the author to consist of sheared mafic metavolcanic rock containing numerous contorted quartz pods or veinlets within zones of intense shearing. Foliation in the rocks at this location has a general orientation of 245/75, whereas notable zones of quartz veining striking approximately 055 and 090 were observed.

Hodge (1981a) reported that diamond drilling of the D-Zone East by Gallant Gold Mines obtained 5 ore-grade intersections over a strike length of 150 m. The average grade of these 5 intersections was reported by Hodge (1981a) to be 0.37 ounce per ton gold over 1.5 m. Hodge (1981a) used this information to estimate reserves of 42 305 tons grading 0.36 ounce per ton gold in the D-Zone East. McGregor (1993) indicated that follow-up diamond drilling in the area northeast of the Albany shaft by Noramco in 1988 returned assay results of 0.075 ounce per ton gold over 12.1 m in DDH HC88-240 in the D-Zone, and 0.06 ounce per ton gold over 11.46 m in DDH HC88-251 at the North Porphyry Contact zone. McGregor (1993) did not provide a location for the North Porphyry Contact zone. Kaw–Crow Patricia Gold Mines also reported anomalous gold assays in a diamond-drill hole (KC-19) drilled in this general area in 1936 (AFRI# 52O09SE0613, MDI52O09SE00012).

## FIELD ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703475E 5708500N<br>[occurrence 259 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000213, MDI52O08NE00037 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Field zone was interpreted by Noramco Explorations (1988) to be the southwestern strike-extension of the No. 5 iron formation zone that is known to host gold mineralization on the Pickle Crow property. Diamond-drilling results, reported by Noramco Explorations (1988), indicate that this is a relatively wide zone of low-grade gold mineralization in iron formation. Mineralization has been reported to have been encountered to a depth of at least 210 m. Diamond-drill hole logs indicate that the gold mineralized iron formation at this location is strongly silicified and contains approximately 10% pyrrhotite and trace chalcopyrite. Notable diamond-drilling results include an assay of 0.02 ounce per ton gold over 28.8 m in DDH CP-88-80 and 0.021 ounce per ton gold over 17.5 m in DDH CP-88-88.

## G-P-81-6

| | |
|---|---|
| *Location:* | UTM Zone 15, 706783E 5713016N<br>[occurrence 281 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00018 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Hodge (1981a) reported a single diamond-drill intersection of 0.22 ounce per ton gold over 1.1 m in Gallant Gold Mines DDH G-P-81-6. This gold mineralization was reported from a section consisting of sulphidized iron formation and quartz. The iron formation was reported to contain over 30% sulphides, including pyrrhotite, arsenopyrite (2 to 3%), sphalerite (1%), and chalcopyrite (<1%), whereas the quartz vein was reported to contain 20% sulphides.

## HOOK VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 703130E 5708500N<br>[occurrence 260 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000214 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Hook vein was described by Pye (1976) as an approximately north-striking quartz vein that has an average width of 0.3 m over an exposed strike length of 145 m. The vein is contorted in places and is not of uniform thickness. The vein curves sharply to the west at the north end of its exposure, and sharply to the east on its south end, resembling an open Z-shaped flexure (Pye 1976). Pye (1976) reported that the vein mineralization is similar to that of the nearby No. 6 or Springer vein, which contains pyrite, pyrrhotite and arsenopyrite.

The author observed that the vein is hosted within mafic metavolcanic rock. Immediately to the north of the vein, the metavolcanic rock exhibits iron carbonate alteration and has well-developed foliation that strikes approximately 075. A narrow (1 cm), near-horizontal quartz vein was observed in the central portion of the stripped area.

Noramco Explorations (1988, *see* Figure 26) indicated that surface sampling of the vein produced assay results of up to 0.053 ounce per ton gold over 0.76 m. These values were much lower than those this same [1988] report indicated were reported by Central Patricia Gold Mines in 1937 (i.e., up to 2.06 ounces per ton gold over 0.51 m), although visible gold is indicated to be present in the vein.

## KAW CROW PATRICIA KC-26 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 15, 706033E 5708686N [occurrence 267 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00017 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

This occurrence is based on a number of reported anomalous gold assays from 3 diamond-drill holes advanced by Kaw Crow Patricia Gold Mines in 1936 (KC-11, KC-12 and KC-26) and 1 drill hole advanced by Marietta Resource Corporation in 1981 (MA-P-81-15). The geology in the vicinity of this occurrence was reported by North (1986) to be dominated by felsic to intermediate metavolcanic rocks that include tuff, agglomerate and pyroclastic flows. Stratigraphy in the area generally strikes 030, with steep northwesterly dip. All of the anomalous gold assays reported from this area were obtained from samples of quartz-carbonate vein material. These veins or veinlets are typically reported in diamond-drill hole logs to be mineralized with disseminated sulphides including pyrite and chalcopyrite. The most favourable reported assays from this occurrence include 0.09 ounce per ton gold over 0.18 m from Kaw Crow Patricia DDH KC-26 (AFRI# 52O08NE0072) and 0.04 ounce per ton gold over 0.15 m from Marietta Resource Corporation DDH MA-P-81-15 (Hodge 1981b).

## LAKESHORE VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 702304E 5709216N [occurrence 262 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Lakeshore vein was described by Winter (1987) as a complex quartz vein-shear system in mafic metavolcanic rock. A more detailed description of the vein morphology was provided by Pye (1976), who also indicated that the vein is mineralized with chlorite, carbonate, tourmaline, pyrite and pyrrhotite. Significant gold assays were reported from a number of surface channel samples collected from the vein over an approximately 120 m strike length (Winter 1987). Notable results included 0.485 ounce per ton gold over 2.13 m and 2.672 ounces per ton gold over 0.3 m.

## MARIETTA ZONE I

| | |
|---|---|
| *Location:* | UTM Zone 15, 706597E 5709544N<br>[occurrence 269 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00016 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

The geology in the vicinity of this occurrence was reported by North (1986) to be dominated by felsic to intermediate metavolcanic rocks that include tuff, agglomerate and pyroclastic flows. Stratigraphy in the area generally strikes 030, with steep northwesterly dip. This occurrence was described by North (1986) as consisting of numerous quartz-carbonate veins and stringers in intermediate metavolcanic rock that is sometimes mineralized with tourmaline and sulphides. Anomalous gold values were generally reported from veinlets containing disseminated sulphides, including pyrite and chalcopyrite. No appreciable wall-rock alteration was noted in this zone. Notable assays from this zone include 0.24 ounce per ton gold over 1.2 m reported from Kaw Crow Patricia's 1936 DDH KC-6 (AFRI# 52O08NE0072) and 0.04 ounce per ton gold over 0.46 m from Marietta Resource Corporation DDH MA-P-86-19 (North 1986).

## MARIETTA ZONE II

| | |
|---|---|
| *Location:* | UTM Zone 15, 704850E 5706780N<br>[occurrence 254 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000216 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

The geology in the vicinity of this occurrence was reported by North (1986) to be dominated by felsic to intermediate metavolcanic rocks that include tuff, agglomerate and pyroclastic flows. Stratigraphy in the area generally strikes 030, with steep northwesterly dip. The occurrence is associated with an approximately 1600 m long northeast-trending VLF–EM conductor (North 1986). Diamond-drilling results reported by North (1986) indicated that the conductor consists of graphitic, biotite-rich, foliated metasedimentary rock and tuff. No anomalous gold assays were obtained from this material. However, several gold assays between 0.01 and 0.2 ounce per ton gold were reported from concordant to crosscutting quartz veins and stringers (in DDH MA-P-86-21 and MA-P-86-22). The gold mineralized quartz veins are reported to sometimes contain epidote and/or sulphides (i.e., trace chalcopyrite and/or pyrite). The most favourable assay reported from this zone was 0.02 ounce per ton gold over 1.5 m from DDH MA-P-86-21 (North 1986).

## NO. 3 SHAFT VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 705390E 5710817N<br>[occurrence 272 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000203 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This occurrence is based on a single diamond-drill hole assay of 1.6 ounces per ton gold over 0.7 m from DDH W46 (McGregor 1989). This occurrence was reported from a previously unknown quartz vein system. No additional geological information about this occurrence was provided by McGregor (1989).

## NORTHEAST POWDERHOUSE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 703338E 5709900N<br>[occurrence 265 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000208 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Winter (1987) indicated that the Northeast Powderhouse zone is a wide zone of pyrite, pyrrhotite and arsenopyrite mineralization hosted in fractured and brecciated iron formation. McGregor (1989) indicated that this zone is structurally complex, having been folded into compound folds, and being divided into 2 parts (upper and lower zones possibly separated by a fault). The upper zone covers a strike length of approximately 27 m and extends to a depth of 73 m; the lower zone is estimated to cover a strike length of approximately 30 m and extends from 106 m to 167 m below ground surface (McGregor 1989). Reserve estimates of 5500 tons grading 0.15 ounce per ton gold and 21 000 tons grading 0.13 ounce per ton gold for the upper and lower zones, respectively, were provided by McGregor (1989). This reserve estimate was not included by McGregor (1989) in the overall reserve estimate for the Pickle Crow property, and can be considered to be a separate prospect.

## PICKLE CROW MINE

| | |
|---|---|
| *Location:* | UTM Zone 15, 704366E 5709757N<br>[occurrence 266 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Past-Producing Mine with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers*: | MDI52O09SE00007, MDI52O08NE00126, MDI52O09SE00003 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

MacQueen (1987) identifies 5 styles of gold mineralization in the Pickle Crow Mine area. These include

1. high-grade gold-bearing quartz veins occupying east-northeast-striking shear zones that crosscut strata at low to moderate angles. Examples include the No. 1, 2 and 5 veins.
2. low-grade gold-bearing veins that occupy northeast-striking Type 1 shear zones that are approximately parallel to stratigraphy. The Albany shaft shear veins are an example of this type of mineralization.
3. stockwork auriferous quartz veins in porphyry or gabbro intrusions that are contained within or are spatially associated with the east-northeast-striking shear zones. The ABC zone is an example of this type of mineralization.
4. high-grade auriferous veins in northwest-trending fractures that commonly splay off east-northeast-striking shear zones. The No. 9 vein is an example of this type of mineralization.
5. stratabound auriferous sulphide zones within iron formation adjacent to east-northeast-striking shear zones. Examples include the No. 1 and No. 5 iron formation zones, and the Central Patricia Gold Mine.

The most significant gold mineralization on the Pickle Crow property is hosted by the east-northeast-striking shears. MacQueen (1987) indicated that mineralization in the No. 5 vein (which is typical of veins hosted in east-northeast-striking shears) is localized in an approximately 100 m strike length portion of the No. 5 shear zone where it crosscuts banded iron formation and magnetite-rich basalt. The mineralized east-northeast-striking shear zones are typically 2 to 5 m wide and dip 60 to 70° to the north. The shear zones have strike lengths of up to 500 m and connect with larger northeast-striking shear zones. Most of these shears are also folded into asymmetric Z-folds. Although most of the gold mineralized veins are hosted within mafic metavolcanic rock or banded iron formation, gold mineralization also is known to occur in veins or shears that crosscut porphyry intrusions and clastic metasedimentary rock. The Arsenide zone is an example of mineralization hosted within argillaceous and conglomeratic metasedimentary rocks (Winter 1987). Gold mineralization in this zone is associated with pyrite and arsenopyrite.

The No. 1 vein system, which has been observed in surface exposures by the author, is similar to the No. 5 vein system in that it is largely mineralized where it crosscuts an iron formation horizon. The iron formation strikes approximately 060, whereas the No. 1 vein system is associated with an approximately 072-striking shear zone that dips steeply toward the north. Quartz veining within the shear zone is irregular, consisting of contorted veinlets and pods. The iron formation within the shear zone is contorted and folded, with fold hinges plunging steeply toward the east. The iron formation has also been sulphidized to a significant extent.

The gold mineralized veins at Pickle Crow consist of >95% quartz, with significant ankerite and calcite, and minor sericite, chlorite, tourmaline, scheelite, siderite, pyrite, pyrrhotite, arsenopyrite, chalcopyrite and free gold (MacQueen 1987). Gold also occurs within stratabound sulphide replacement zones where east-northeast-striking shear zones crosscut banded iron formation. The sulphidized iron

formation was reported by MacQueen to contain pyrite and minor amounts of pyrrhotite, arsenopyrite and chalcopyrite. Gold occurs either within the sulphides or in close association with them. The mineralized iron formation was reported by MacQueen (1987) to be surrounded by an alteration halo consisting of intense ankeritization of iron formation and the adjacent basalts.

Due to the complex geological structure of the Pickle Crow area and the close association between mineralized shear zones and iron formation, historic gold production from the Pickle Crow Mine property occurred from a number of different vein systems. The bulk of the historic gold production was reported by McGregor (1993) to have been obtained from the No. 1, 2, 5, 6 and 9 vein systems, with approximately 15 others having contributed ore. Total production from the Pickle Crow Mine between 1935 and 1966 was 1 446 214 ounces of gold and 168 757 ounces of silver from 3 070 045 tons of ore (McGregor 1993).

Although gold production on the Pickle Crow property ceased in 1966, substantial gold reserves are reported to remain in a number of mineralized zones. McGregor (1989) provided the following reserve estimates for 13 separate ore zones accessible from the existing No. 1, No. 3 and Albany shafts.

| | Shallow Reserves | Intermediate Reserves |
|---|---|---|
| **No. 1 Shaft Area Reserves** | | |
| No. 1 Vein and Eastern Iron Formation | 81 500 tons @ 0.2 oz/ton | 112 400 tons @ 0.28 oz/ton |
| No. 5 Vein, No. 11 Vein and Western Iron Formation | 172 700 tons @ 0.2 oz/ton | 524 300 tons @ 0.2 oz/ton |
| No. 9 Vein | | 1600 tons @ 0.4 oz/ton |
| Central Iron Formation | | 40 800 tons @ 0.16 oz/ton |
| **No. 3 Shaft Area Reserves** | | |
| No. 2 Vein | 11 500 tons @ 0.36 oz/ton | 7700 tons @ 0.18 oz/ton |
| No. 3 and 4 Vein System | 11 000 tons @ 0.35 oz/ton | 11 000 tons @ 0.35 oz/ton |
| No. 6 and 7 Veins | | 25 900 tons @ 0.24 oz/ton |
| No. 8 Vein | 17 000 tons @ 0.16 oz/ton | 1800 tons @ 0.24 oz/ton |
| No. 10 Vein | | 3700 tons @ 0.29 oz/ton |
| No. 12 and 12A Veins | | 10 900 tons @ 0.18 oz/ton |
| No. 13, 13A and Arsenide Veins | 30 200 tons @ 0.25 oz/ton | 13 700 tons @ 0.29 oz/ton |
| **Albany Shaft Area Reserves** | | |
| No. 14 Vein | 5600 tons @ 0.25 oz/ton | |
| No. 15 Vein | 40 000 tons @ 0.27 oz/ton | |
| No. 16 Vein | 58 900 tons @ 0.29 oz/ton | |

McGregor (1993) provided a total mineral resource estimate of 1 395 700 tons at a diluted grade of 0.18 ounces per ton, including an estimate of 52 000 tons of open pit reserves at 0.21 ounce per ton. More recently, Cantera Mining has estimated that 343 616 tons of open pit ore is available from the No. 1, 2, 5, 8, 11, 13, 14, 15 and 16 veins, and the No. 1 and 5 banded iron formations (Senes Consultants 2002).

## PICKWICK

| | |
|---|---|
| *Location:* | UTM Zone 15, 705135E 5712269N<br>[occurrence 278 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Pickwick occurrence is located in an area of limited bedrock exposure immediately north of the Kawinogans River. Diamond drilling in 1937 by Pickwick Gold Mines (AFRI# 52O09SE0131) is reported to have encountered significant gold mineralization in 3 diamond-drill holes (P-12, P-16 and P-18). Mineralization was reported to occur in quartz veins within sheared and silicified metavolcanic rock and possible iron formation. The most significant drill intersections were reported from DDH P-16, where up to 0.1 ounce per ton gold was reported over 1.5 m in silicified metavolcanic rock containing a 4 cm wide quartz vein. The quartz vein is reported to have been mineralized with trace pyrite. During drilling of this hole, there is a reported encounter of 0.08 ounce per ton gold in a 1.2 m wide section that was interpreted as a probable iron formation horizon (although magnetite was absent). This gold mineralized horizon reportedly contained up to 3% pyrrhotite. Early diamond-drill results from the Pickwick property reportedly contained higher gold values. However, Thomson (1937) reported that re-assaying of the anomalous intersections returned insignificant gold values, and that the original results for DDH P-1 and P-2 should be disregarded.

## RIOPELLE VEIN

| | |
|---|---|
| *Location:* | UTM Zone 15, 703712E 5709242N<br>[occurrence 264 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O08NE00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Riopelle vein was described by MacQueen (1987) as being hosted within the steeply north-dipping (65 to 75°), east-northeast-striking Riopelle shear zone. The host rocks are described as basalt, with the vein occurring near the contact between a large massive flow and a unit of pillowed flows. This lithological contact has been folded, with a north- to north-northeast-striking fracture having developed off the main shear zone. This north-northeast-striking fracture is reported to contain the thickest portion of the vein. The vein ranges in thickness from 2 cm to 1 m and consists of coarse-grained white quartz mineralized with tourmaline, sericite, scheelite and visible gold. MacQueen (1987) indicated that the vein has been outlined for a strike length of approximately 180 m and to a depth of 100 m.

A stripped exposure of a portion of the Riopelle vein observed by the author had an average orientation of approximately 315/60 (i.e., northwest striking). The east-northeast-striking portion of the vein could not be observed, apparently overlain by rubble from previous trenching. The general foliation orientation measured in a nearby outcrop of relatively weakly deformed mafic metavolcanic rock was 070.

McGregor (1989) indicated that Noramco carried out surface sampling on this vein that provided an average grade of 0.24 ounce per ton gold across 1.5 m for a strike length of 15 m. The most favourable diamond-drill result for this vein reported by Winter (1987) was 0.278 ounce per ton gold over a width of 0.3 m.

## ROAD ZONE (CP-37)

| | |
|---|---|
| *Location:* | UTM Zone 15, 702150E 5708125N<br>[occurrence 256 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000215 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Noramco Explorations (1988) reported an assay of 0.11 ounce per ton gold over the width (0.7 m) of a thin, sheared and sulphide-rich quartz-albite porphyry intrusion in DDH CP-88-37. More recently, Archibald (2004) reported gold mineralization near the contact between mafic metavolcanic rock–banded iron formation and a quartz-feldspar porphyry intrusion at a location referred to as the Road zone. This reported mineralization appears to be in close proximity to CP-88-37. Strong northwest-striking foliation was also noted in this area by Archibald (2004).

Outcrop exposures observed in the area of this occurrence by the author included pillowed mafic metavolcanic rock, porphyry, and banded oxide-facies iron formation. Sulphidized iron formation was exposed in trenches at this location in close proximity to a porphyry intrusion containing quartz veining. A well-developed northwest-striking foliation (azimuth 135) was measured in the mafic metavolcanic rock. A grab sample of sulphidized iron formation collected from the trench assayed <0.01 ounce per ton gold.

## SOUTHWEST IRON FORMATION ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702915E 5708220N<br>[occurrence 257 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000202 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

This zone was indicated by McGregor (1989) to be an area of gold mineralization in iron formation that is based the intersection of gold mineralization at a depth of approximately 244 m in 2 diamond-drill holes located 40 m apart. The reported gold values from these holes were 0.21 ounce per ton gold over 3.9 m and 0.25 ounce per ton gold over 0.98 m. No other information regarding this occurrence could be found in the assessment files.

## SOUTHWEST POWDERHOUSE ZONE

| | |
|---|---|
| *Location:* | UTM Zone 15, 702460E 5708640N<br>[occurrence 261 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/8 (NE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000212, MDI52O08NE00021, MDI52O08NE00039 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Southwest Powderhouse zone consists of 2 areas of gold mineralization in iron formation referred to as the A/B and 1347 zones (Noramco Explorations 1989b). The banded oxide-facies iron formation(s) occur within a sequence dominated by mafic metavolcanic rock. It was noted that the mineralization in the A/B zone occurs in the hinge zone of a fold. The fold was interpreted (by D.G. Laderoute in Noramco Explorations 1989b) to be an anticline (northeast plunging) that has been folded about a northeast-striking axial plane (Powderhouse Lake anticline). Considerable brittle deformation (i.e., tension fractures and brecciation) is also reported, especially in the hinge zone of the fold. The most significant mineralization was reported to be centred upon the fold hinge, extending for approximately 45 m on each limb (Noramco Explorations 1989b). This gold mineralization was also reported to extend to a depth of at least 110 m. Primary magnetite and secondary chlorite (i.e., a product of greenschist-facies metamorphism of the iron formation) in the mineralized zone were reported to have been sulphidized to pyrrhotite, pyrite, chalcopyrite and arsenopyrite (Noramco Explorations 1989a). Pervasive silicification, including quartz veining and tension fracture filling was also reported in this zone (Noramco Explorations 1989a). Gold occurs in association with the sulphides, most commonly as free grains, but sometimes within sulphides (Noramco Explorations 1989a). The western portion of the A/B zone (originally referred to as the B zone), which is exposed on surface approximately 60 m west of the gold mineralized fold hinge, was interpreted to represent a portion of the iron formation that has been cross folded into a dome-like structure around a north-northwest-striking axis (Noramco Explorations 1989b). The A/B zone is also reported to terminate to the north against an interpreted northwest-striking late ($D_3$) fault (Noramco Explorations 1989a). An approximate grade of 0.22 ounce per ton gold over an average width of approximately 2 m was estimated for the fold hinge portion of the A/B zone (Noramco Explorations 1989b). Significant gold values from diamond drilling in the western portions of the A/B zone were also reported (Noramco Explorations 1989b). However, no grade estimates were provided for this mineralization.

The 1347 zone was reported to be located approximately 300 m west of the A/B zone (Noramco Explorations 1989b). Significant gold values were only reported from 1 drill hole (CP-89-193) advanced by Noramco in 1989.

McGregor (1993) provided a resource estimate of 21 000 tons grading 0.22 ounce per ton gold for the anticlinal part of the mineralized structure.

Recent diamond drilling by King's Bay Gold (Archibald 2004) in the vicinity of the Southwest Powderhouse zone resulted in numerous significant gold intersections.

## STRICKLAND VEINS

| | |
|---|---|
| *Location:* | UTM Zone 15, 705590E 5711130N<br>[occurrence 274 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000207 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The Strickland veins are described by McGregor (1989) as a group of narrow veins exposed at surface approximately 300 m northwest of the No. 3 shaft. This vein system was indicated by McGregor (1989, *see* Drawing No. 7) to be a part of the same vein system as the No. 17 vein. Although indicated by McGregor (1989) to be a promising exploration target, no assay values were provided for the Strickland veins.

## WINOGA PROSPECT (TARP LAKE 6A)

| | |
|---|---|
| *Location:* | UTM Zone 15, 705628E 5710774N<br>[occurrence 271 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00013 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

This record is based on anomalous assays reported from a number of diamond-drill holes (W-2, W-3, W-17, W-20, W-22, W-28, W-32, W-34, W-37, W-40, W-41, W-43 to W-48, W-50, W-51, WX-21, WX-27, WX-30, WX-33 and WX-36) advanced on claim PA 2062 by Winoga Patricia Gold Mines Limited in 1936–1937 (AFRI# 52O09SE0140). The most notable results were reported from drill holes W-34, W-45 and W-46.

On the log, diamond-drill hole W-34 was reported to have encountered visible gold in an approximately 30 cm wide intersection of quartz vein material. The gold mineralization was reported to be hosted in schistose, silicified and carbonatized metavolcanic rock (logged as andesite). Significant assays of up to 3.9 ounces per ton gold over 1.5 m were also reported from an approximately 3 m wide section of core from drill hole W-34 that was indicated to consist of very soft green to grey-green schist. This schistose material contained numerous quartz-carbonate veinlets and disseminated pyrite.

An assay of 4.26 ounces per ton gold was reported from a 0.64 m section of core from drill hole W-45. The assay was obtained from a 2.5 cm quartz vein containing visible gold. This mineralization occurred in material logged as sheared porphyry (sericite schist) mineralized with disseminated pyrite (0.1%).

Drilling of diamond-drill hole W-46 was reported to have encountered a 0.7 m wide intersection of quartz vein material that assayed 1.63 ounces per ton gold. The host rock was reported to be magnetite-rich andesite containing 0.1 to 0.2% pyrite.

Thomson (1939) reported that a deep test pit was advanced to test the surface expression of the drill hole W-34 occurrence, but that the results of this work were disappointing.

## WINOGA W-5 (TARP LAKE 6C)

| | |
|---|---|
| *Location:* | UTM Zone 15, 705439E 5709723N<br>[occurrence 268 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00015 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

This occurrence is based on reports of anomalous gold assays from Winoga Patricia Gold Mines diamond-drill holes W-5, W-9, W-10 and W-60 (AFRI# 52O09SE0140). These drill holes were all advanced near the boundary of claim PA 2066 (located to north) and PA 2068 (located to south) during 1936–1937. Lithologies reported to have been encountered during drilling of the boreholes were dominated by andesite and volcanic fragmental rocks, with some narrow quartz-feldspar porphyry units.

Anomalous gold values were reported from a number of drill intersections, with the majority being associated with narrow (<30 cm) quartz veins. Notable assays include 0.32 ounce per ton gold from a 5 cm quartz vein intersection encountered during drilling of DDH W-5, and an assay of 0.1 ounce per ton gold from a 0.73 cm intersection that contained a 10 cm quartz vein mineralized with minor pyrrhotite in W-60.

## WINOGA W-18 (TARP LAKE 6B)

| | |
|---|---|
| *Location:* | UTM Zone 15, 705504E 5710304N<br>[occurrence 270 on Map 1 (back pocket)] |
| *NTS Map Area:* | 52 O/9 (SE) |
| *MNDM Township:* | Connell |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52O09SE00014 |
| *Subprovince/Belt/Assemblage*: | Uchi / Pickle Lake greenstone belt / Confederation assemblage |

This occurrence is based on reports of anomalous gold assays from Winoga Patricia Gold Mines diamond-drill holes W-16 and W-18 (AFRI# 52O09SE0140). These drill holes were both advanced on claim PA 2066 in 1936. Lithologies reported to have been encountered during drilling of the boreholes included andesite and volcanic fragmental rocks. Anomalous gold values were reported in a number of quartz-carbonate vein intersections ranging in width from approximately 6 to 50 cm. Minor disseminated pyrite was reported in some of the veins. The most notable assay was 0.09 ounce per ton gold from a 25 cm intersection of quartz-carbonate vein material in drill hole W-18.

# MINERAL OCCURRENCES OF THE CENTRAL AND EASTERN UCHI DOMAIN: MIMINISKA LAKE AREA (NTS 52 P)

## Summary of Occurrence Areas: Pickle Lake Greenstone Belt

### JULY FALLS AREA

July Falls Mafic Stock Occurrence
July Falls No. 1
Little July Falls

### McCULLAGH CREEK–FIRST LOON LAKE AREA

First Loon Lake Prospect
Kaw River Occurrence
McCullagh Creek KAF-87-18 Occurrence
McCullagh Creek KAF-89-34 Occurrence
McCullagh Creek Zinc Prospect

## Summary of Occurrence Areas: Lake St. Joseph Greenstone Belt

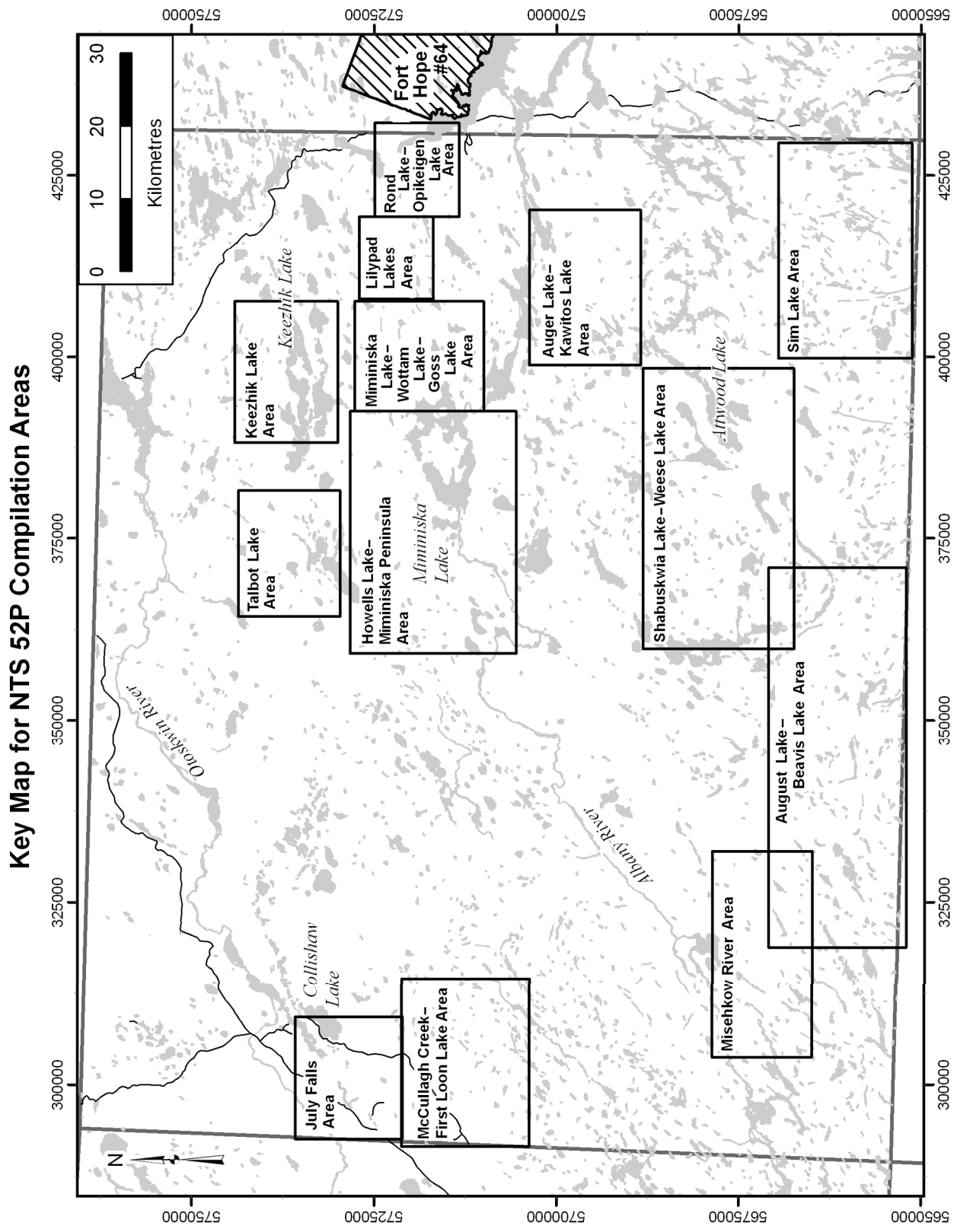
### MISEHKOW RIVER AREA

Dome Misehkow River 312-001
Dome Misehkow River 312-004
Dome Misehkow River 312-005
Misehkow River Iron Prospect
Ontario Gold Joint Venture Misehkow River Prospect
Sturdy (Hummingbird Lake) Occurrence

## Summary of Occurrence Areas: English River Metasedimentary Basins

### AUGUST LAKE–BEAVIS LAKE AREA

August Lake Occurrence
Greenmantle Lake Occurrence
Heart Attack (Beavis) Lake Occurrence




Key map for NTS 52 P compilation areas

## Summary of Occurrence Areas: Miminiska–Fort Hope Greenstone Belt

### SHABUSKWIA LAKE–WEESE LAKE AREA

Gould Lake
Leitch
Luella Lake
Weese Lake

### SIM LAKE AREA

Sim Lake Occurrence

### AUGER LAKE–KAWITOS LAKE AREA

Boylen, M.J.
Doorigan Property (Alpamayo) Occurrence
Gold Fields Occurrence
NJZ-76 Occurrence
Nyla Occurrence
Ryley–Cormac Occurrence

### TALBOT LAKE AREA

Talbot Lake Prospect

### KEEZHIK LAKE AREA

Brash–Keezhik Lakes
Hansen
KL-12 Zone
KL-L18 Zone
KL-27 Zone
KL-31 Zone
KL-35 Zone
KL-38 Zone
NBK
S04-08
S04-09
S04-12

### HOWELLS LAKE–MIMINISKA PENINSULA AREA

80-MW-13 Occurrence
Baroque–Felmont
Baroque Grid 12B
Currie Occurrence
Howells Lake Prospect
M-6
MC79-10
S04-01 Occurrence
Snowdrift Lake
Thompson Occurrence
Ymir (Szetu–Bayne) Occurrence

### MIMINISKA LAKE–WOTTAM LAKE–GOSS LAKE AREA

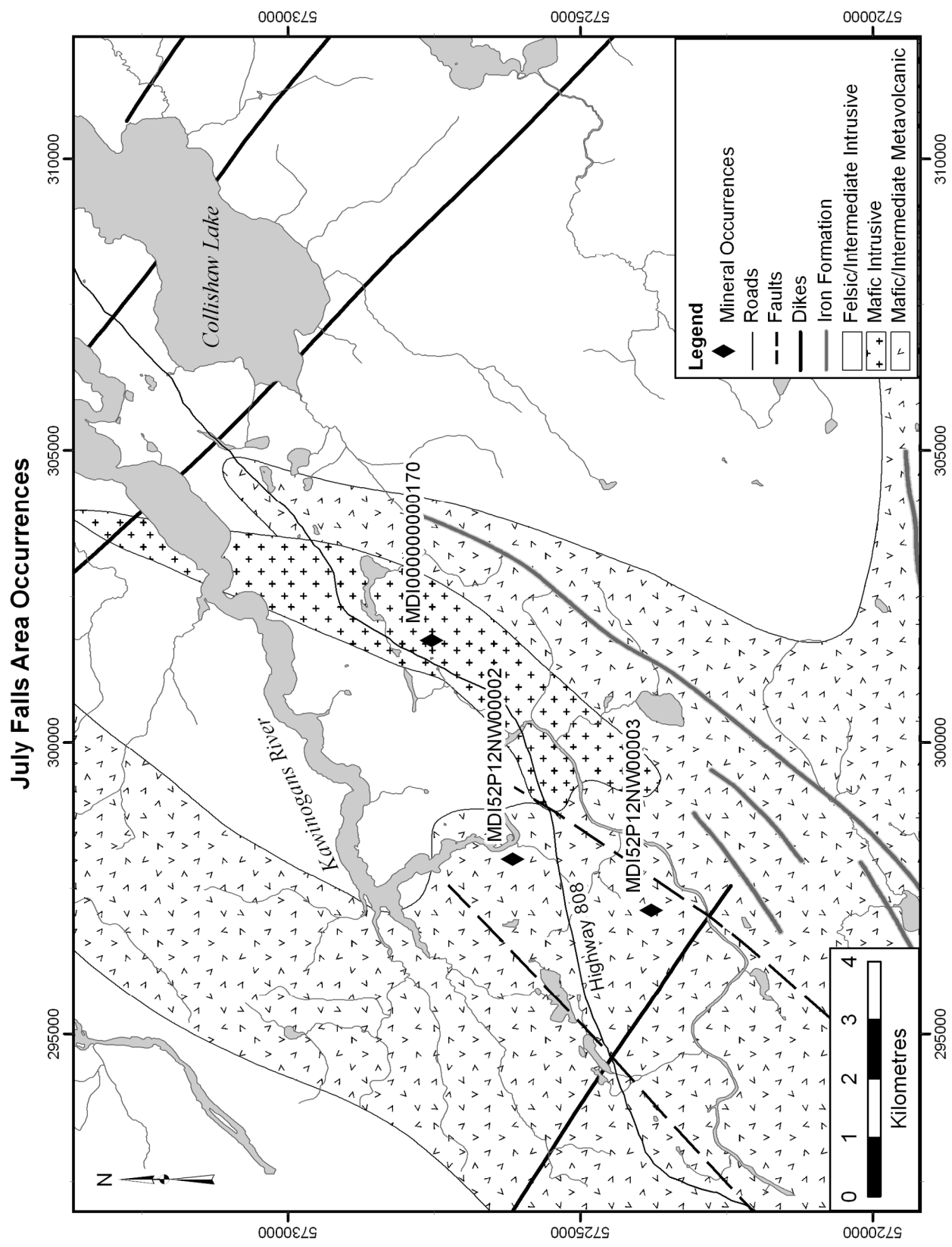
Goss Lake Prospect
International (WSaspy3) Occurrence
Miminiska Lake Gold Prospect
Miminiska Lake Iron Occurrence East
Miminiska Lake Iron Occurrence West
Niska Occurrence
North Wottam Lake
SL-87-04
Wottam Lake (WS41) Occurrence
WSaspy1

### LILYPAD LAKES AREA

F Anomaly Dike
JJ Dike
Pollucite Dike
Rubellite Dike
South Dike
Spodumene Dike

### ROND LAKE–OPIKEIGEN LAKE AREA

Fort Hope Gold Mine
OL-12
OL-29
OL-87-17
OL-87-18
Rich Lake
Rond Lake
Zone 41
Zone 41 Extension




NTS 52 P: July Falls area occurrences

# JULY FALLS AREA OCCURRENCES

***Exploration History***: *1947*: Prospecting and diamond drilling by Central Patricia Gold Mines and Conwest Explorations on the Little July Falls prospect and the July Falls mafic stock occurrence. *1948*: Prospecting and diamond drilling by Crowshore Patricia Gold Mines on the July Falls No. 1 prospect. *1972*: Geophysical surveys and diamond drilling by Umex Inc. on sulphide occurrence 1 km south of July Falls. *1988–1989*: Prospecting, geophysical, geological and geochemical surveys, and diamond drilling by Norwin Geological and July Resources Corporation.

## General Geology

The July Falls area occurrences are located at the northeast end of the Pickle Lake greenstone belt. These occurrences are found within a mafic metavolcanic rock dominated supracrustal sequence identified by Young (2003) as being part of the Pickle Crow assemblage (>2860 Ma), and within a mafic intrusion referred to by Stott (1996) as the July Falls mafic stock. According to Young (2003), the Pickle Crow assemblage is dominated by massive and pillowed mafic metavolcanic flows with subordinate gabbroic sills. The mafic metavolcanic rock are intercalated with thin, laterally continuous banded iron formation and small, discontinuous lenses of intermediate metavolcanic rock. All lithologies were intruded by semi-concordant feldspar porphyry dikes. Stratigraphy generally faces toward the northwest, except where asymmetric folding (mainly in the Pickle Crow Mine area) has caused reversals in the younging direction (Young 2003). The July Falls mafic stock is described by Stott (1996) as a composite mafic stock consisting of phases ranging from quartz diorite to gabbro, pegmatitic gabbro and hornblendite.

## Structural Geology

The structural geology of the July Falls area is described by McAuley and Winter (1990). The earliest structures in the area appear to parallel the volcanic stratigraphy and strike approximately north-northeast to northeast. These structures are interpreted by McAuley and Winter (1990) to be crosscut by later 060-striking shear zones. These shear zones are, in turn, crosscut by later shear/fault zones that strike approximately 335 and 100 to 120, respectively. These and the east-striking veins observed at the July Falls No. 1 prospect appear to be similar to the structures mapped by MacQueen (1987) at the Pickle Crow Mine property. McAuley and Winter (1990) interpreted mineralization at the 3 July Falls area gold prospects or occurrences to have a close spatial association with the intersection of the 060- and 335-striking structures.

## Deposit Geology

The geology of each of the individual deposits is described below.

## JULY FALLS MAFIC STOCK OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 301750E 5727550N [occurrence 1 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (NW) |
| *MNDM Township Area:* | Collishaw Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000170 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Central Patricia Gold Mines Ltd.–Conwest Exploration Co. Ltd. (1948) reported the occurrence of gold mineralization within the July Falls mafic stock. The mineralization occurs in a narrow, contorted quartz vein that is mineralized with chalcopyrite, pyrrhotite and pyrite. The mineralization and structure at this location were described as being similar to that found at the Little July Falls prospect (Central Patricia Gold Mines–Conwest Exploration 1948). An assay of 0.03 ounce per ton gold was reported from a grab sample collected from this vein.

An attempt by the author to locate this occurrence in the field was unsuccessful, as the location shown on previous OGS maps is located in an area of thick, sandy overburden. Therefore, it is likely that this occurrence is located 500 to 1000 m further to the southeast, in an area where a number of outcrops were mapped by Stott et al. (1989).

## JULY FALLS NO. 1

| | |
|---|---|
| *Location:* | UTM Zone 16, 297997E 5726156N [occurrence 2 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (NW) |
| *MNDM Township Area:* | Collishaw Lake Area |
| *Commodities:* | Au |
| *Status*: | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P12NW00002 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

In 1948, Crowshore Patricia Gold Mines is reported by McAuley and Winter (1990) to have completed 30 trenches and 12 diamond-drill holes in the vicinity of this prospect. The trenching work uncovered 5 quartz veins striking approximately 080 to 090. An additional 3 veins were identified as a result of the diamond-drilling program. The rocks of the area were mapped by Stott et al. (1989) as mafic metavolcanic rock. However, diamond-drill hole logs (Crowshore Patricia Gold Mines Limited 1948) indicate the presence of numerous lithologies, including andesite, dacite, rhyolite, feldspar porphyry, carbonate dikes and diabase. The drill-hole logs provide evidence of strong deformation and alteration (McAuley and Winter 1990). Therefore, it is possible that the rocks logged as felsic volcanic rock may, in fact, have been strongly altered mafic metavolcanic rock. Alteration includes silicification, bleaching and carbonatization. Numerous quartz and quartz-carbonate stringers and veins are also reported. Sulphides, including pyrite, pyrrhotite, chalcopyrite and galena(?) are commonly present in the areas of strong deformation and alteration, with chalcopyrite closely associated with gold. McAuley and Winter (1990) note that this prospect is located immediately west of a 335-trending lineament that is hypothesized have a genetic relationship to the gold mineralization.

Significant gold intersections reported by Crowshore Patricia and documented by McAuley and Winter (1990) include the following results: 0.84 ounce per ton gold over 2.1 feet in diamond-drill hole J6-2; 0.28 ounce per ton gold over 0.9 feet in J-2; 0.12 ounce per ton gold over 2 feet in J6-6; and 0.46 ounce per ton gold over 0.5 feet in J6-7.

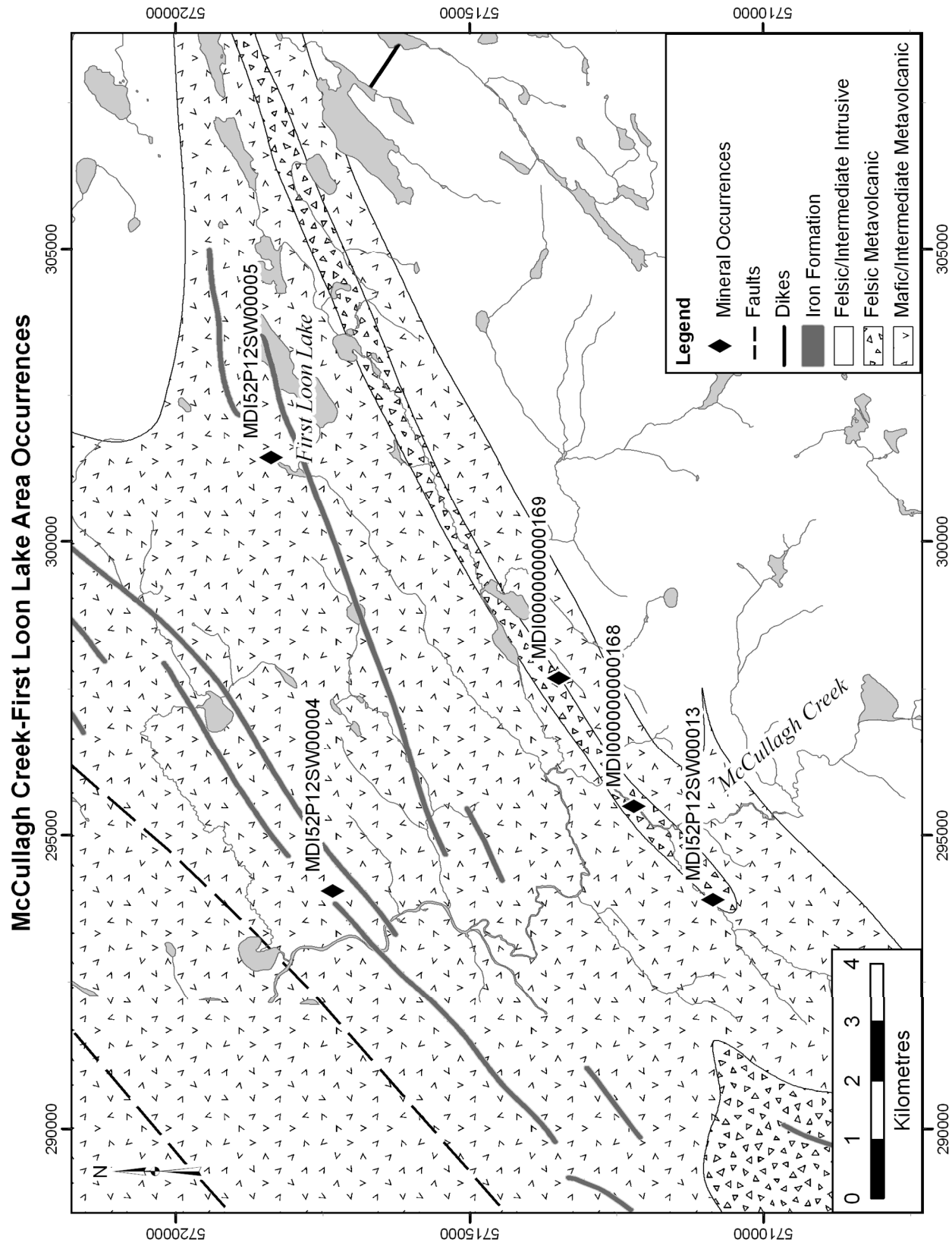
The author located one of the quartz veins associated with this occurrence along the trend of several overgrown exploration pits from the original 1948 exploration program. These pits were located near the eastern edge of a high bedrock ridge. The quartz vein is approximately 20 cm wide, consists of black quartz containing trace pyrite, and has an orientation of approximately 250/75. The host rocks are mafic metavolcanic that have been silicified and carbonatized in close proximity to the quartz vein contact. An extremely large tabular piece of quartz vein float was also found approximately 15 m north of the quartz vein. This appeared to be material excavated during previous exploration activities, and is interpreted to have been located in close proximity to its source. The quartz in this float was white to black, appeared to be barren of sulphides, and contained minor iron carbonate. Grab samples of the black quartz vein and quartz float both returned gold assays of less than 0.01 ounce per ton gold.

## LITTLE JULY FALLS

| | |
|---|---|
| *Location:* | UTM Zone 16, 297125E 5723785N [occurrence 3 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (NW) |
| *MNDM Township Area:* | Collishaw Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P12NW00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

McAuley and Winter (1990) indicated that rocks in the vicinity of this prospect are dominated by massive mafic metavolcanic rock. Exposed outcrop in the main trench consists of fine-grained pillowed flows. The volcanic sequence is reported to strike between 020 and 040, and dips steeply to the northwest. Younging indicators also indicate that the rocks are likely to face northwest. The mafic metavolcanic rock was intruded by lamprophyre dikes. One of these dikes has been mapped within a late shear that strikes approximately 120. Gold mineralization at this location occurs in 2 parallel quartz veins that crosscut the stratigraphy and strike approximately 330 to 335 and dip 60° toward the west. The veins occur within shear zones that are characterized by moderate to strong chloritization, brecciation, shearing, local carbonatization and silicification, and numerous quartz and quartz-carbonate veinlets and veins. The shear zones mapped in this area have been observed to pinch and swell along strike. The 2 main mineralized veins reach maximum widths of 0.65 and 0.3 m and consist of smoky grey to milky white quartz containing disseminated sulphides (1 to 2% with localized concentrations of up to 5%). Gold is associated with chalcopyrite, bornite, pyrite, pyrrhotite and arsenopyrite, and the highest assays are generally obtained from samples containing the highest sulphide concentrations. Trenching and diamond drilling carried out by Central Patricia Gold Mines–Conwest Explorations (1948) and July Resources (McAuley and Winter 1990) identified gold mineralization over an approximate strike length of 150 m. Intense northeast-trending cross fractures and drag folds have been observed in the area between the gold mineralized veins. Quartz veinlets also occur parallel to the cross fractures, and tend to be most abundant in the area where the 2 mineralized veins are widest.

An assay of 0.181 ounces per ton gold was obtained over 1.28 m from a mineralized quartz vein intersected by July Resources drill hole JR89-4B. Other notable assays reported by July Resources include 0.095 ounce per ton gold (3.25 g/t Au) over 0.3 m in JL89-03, 0.082 ounce per ton gold (2.8 g/t Au) over 0.4 m in JL89-05, 0.417 ounce per ton gold from 20 cm channel sample from eastern vein, and 0.824 ounce per ton gold from a 60 cm wide sample across the main (western) vein.




NTS 52 P: McCullagh Creek–First Loon Lake area occurrences

# McCULLAGH CREEK–FIRST LOON LAKE AREA OCCURRENCES

***Access**:* Winter road and water access from Pickle Lake.

***Exploration History***: *1930s*: Prospecting and stripping work in McCullagh Creek area by unknown operator. *1946*: Magnetic survey by Bankur Patricia Gold Mines. *Early 1970s*: Airborne electromagnetic surveys and diamond drilling by Umex, Inco and Conwest Exploration. *1984*: Ground geophysical and geological surveys by Van Horne Gold Exploration. *1985–1989*: Airborne geophysics, ground geophysics, and diamond drilling by Kerr Addison Mines and Minnova. *1986*: Humus geochemical sampling by Geocanex. *1986*: Diamond drilling by Power Explorations. *1986–1988*: Ground geophysical surveys, geological mapping and diamond drilling by Umex. *1990–1991*: Diamond drilling by Major General Resources.

## General Geology

The McCullagh Creek–First Loon Lake area of the Pickle Lake greenstone belt is underlain by supracrustal rocks of 3 distinct tectonostratigraphic assemblages (Pickle Crow, Confederation and Kaminiskag). The northernmost portions of the area are underlain by a northeast-striking sequence of supracrustal rocks defined by Stott (1996) as the Pickle Crow assemblage. According to Young (2003), this assemblage is dominated by massive and pillowed mafic metavolcanic flows with subordinate gabbroic sills. The mafic metavolcanic rock is intercalated with thin, laterally continuous banded iron formation and small, discontinuous lenses of intermediate metavolcanic rock. All lithologies were intruded by semi-concordant feldspar porphyry dikes. Stratigraphy generally faces toward the northwest, except where asymmetric folding (mainly in the Pickle Crow Mine area) has caused reversals in the younging direction (Young 2003). The minimum age of this assemblage is estimated to be 2860 Ma, based on a U/Pb zircon age obtained from a quartz porphyry intrusion (Stott 1996).

To the southeast, a relatively thin wedge of younger and less strongly deformed metavolcanic rock interpreted to be part of the Confederation assemblage (<2744 Ma) was identified by Young (2003). These rocks consist of intercalated mafic and intermediate metavolcanic rocks. The contact between these assemblages is an inferred angular unconformity (Young 2003).

Rocks of the Kaminiskag (former Woman) assemblage (circa 2836 Ma) are found to the southeast of the Confederation assemblage. The Kaminiskag assemblage is dominated by mafic metavolcanic flows, with thinner layers of felsic to intermediate metavolcanic ash flows. Minor amounts of banded iron formation have been reported in the mafic metavolcanic rock, and fine-grained clastic metasediments have been documented in diamond-drill core sections interbedded within the felsic to intermediate volcanic rocks. The mafic metavolcanic rock are generally strongly foliated massive amphibolites, although minor amounts of ultramafic material have also been reported (Stott 1996). The main felsic to intermediate volcanic unit is a quartz-phyric dacite tuff that can be traced over a strike length of 8 km. This unit locally contains thin, massive sulphide lenses that are dominated by pyrrhotite and are overlain by chert (Stott 1996).

The Kaminiskag assemblage rocks of the McCullagh Creek area are bounded to the southeast by granitic rock of the Second Loon pluton. This intrusion was interpreted by Stott (1996) to have imposed a contact strain and metamorphic (i.e., amphibolite-facies) aureole upon the adjacent supracrustal rocks.

## Structural Geology

Stratigraphy and foliation in the McCullagh Creek–First Loon Lake area are generally subparallel, strike northeast, and dip steeply toward the northwest (Stott et al. 1989).

Strongly deformed rocks that exhibit extensive silica and carbonate alteration occur in the northwestern portion of the area, near the Kawinogans River (Young 2003). This deformation zone extends toward the southwest, to the Pickle Crow Mine area. Young (2003) attributed this deformation to a deformation event that also produced folds in the Pickle Crow Mine and Central Patricia Mine areas. These folds include an anticline to the northwest, and a syncline to the southeast. Axial surfaces strike southwest and dip steeply to the northwest, with moderate to steep northeast-plunging hinge lines (Young 2003).

A large westerly plunging S-fold has also been identified further to the northeast at First Loon Lake (Mullen 1988). Dyer (1991) indicated that a major structural discontinuity separates this S-folded sequence from a less deformed sequence to the southeast. This discontinuity may represent the boundary between rocks of the Pickle Crow (>2860 Ma) and Confederation (<2744 Ma) assemblages. Rocks of the Pickle Crow assemblage typically exhibit younging directions that face toward the northwest (Young 2003). However, stratigraphic indicators reported by Young (2003) suggest that the metavolcanic rock locally face toward the southeast in the vicinity of First Loon Lake, as would be expected from the geometry of the S-fold that has been mapped in this area. The south-facing rocks of the Confederation assemblage that occur to the southeast are interpreted to overlie the Pickle Crow assemblage above an angular unconformity.

Diamond-drill hole logs (AFRI# 52P12SW0070) also indicate the presence of a significant northeast-striking deformation zone further to the southeast, approximately parallel to McCullagh Creek.

## Deposit Geology

The geology of each of the individual deposits is described below.

## FIRST LOON LAKE PROSPECT

| | |
|---|---|
| *Location*: | UTM Zone 16, 301446E 5718383N<br>[occurrence 4 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (SW) |
| *MNDM Township Area:* | First Loon Lake Area |
| *Commodities:* | Au |
| *Status*: | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P12SW00005 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

Dyer (1991) indicated that the First Loon Lake area is underlain by several bands of chert-magnetite-sulphide iron formation interbedded with mafic and ultramafic metavolcanic rocks. The supracrustal rock sequence was intruded by quartz-feldspar porphyry dikes, lamprophyre dikes and tonalite of the Croshaw Lake pluton.

Supracrustal rocks in the vicinity of First Loon Lake were deformed by a large westerly plunging S-fold. Two limbs of this fold were encountered during drilling of diamond-drill hole FL-88-12 (Mullen 1988). A 55 m wide deformation zone characterized by extensive quartz veining was also encountered

during this drilling. This deformation zone is parallel to the axial plane of the fold. Stott et al. (1989) indicated that foliations in this area strike approximately east, and dip steeply to the south (approximately 80°). Mineral lineations plunge moderately toward the southwest.

Dyer (1991) indicated that a major structural discontinuity separates the S-folded sequence from a less deformed sequence to the southeast. This discontinuity may represent the boundary between rocks of the Pickle Crow (>2860 Ma) and Confederation (<2744 Ma) assemblages.

Diamond drilling carried out by Umex and Major General Resources at this location targeted folded, sulphidized iron formation and axial planar deformation zones. Dyer (1991) indicated that the most favourable gold values correlate with higher sulphide concentrations, generally within 150 m of fold closures.

Diamond-drilling at this prospect (DDH FL-88-8, FL-88-11, FL-88-12 and FLL-91-15) encountered a number of mineralization lithologies, including altered komatiite, massive mafic metavolcanic rock, quartz porphyry and iron formation (Mullen 1988; Dyer 1991). Gold mineralization generally occurs within sulphidized iron formation. The mineralized iron formation at FL-88-8 is reported by Mullen (1988) to consist of pyrrhotite (up to 50% over 1 m) with minor pyrite, magnetite and grünerite. Assay values reported from sulphidized iron formation intersections include 0.066 ounce per ton gold over 6.4 m in FL-88-8, 0.053 ounce per ton gold over 1.05 m in FLL-91-15, 0.02 ounce per ton gold over 1.5 m in FL-88-11, and 0.03 ounce per ton gold over 1.1 m from FL-88-12. A 55 m wide zone of extensive quartz veining that parallels the fold axial plane is reported by Mullen (1988) in drill hole FL-88-12. The veins were up to 60 cm wide and are mineralized with albite, chlorite, tourmaline, calcite, hematite, pyrrhotite and chalcopyrite. The best assay obtained from this zone was 0.02 ounce per ton gold over 1.5 m.

## KAW RIVER OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 294050E 5717329N<br>[occurrence 5 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (SW) |
| *MNDM Township Area:* | First Loon Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P12SW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Pickle Crow assemblage |

The geology in the immediate vicinity of the Kaw River occurrence was summarized by Joliffe (1987) as consisting predominantly of intermediate flows, mafic tuffs and flows, with an intermediate intrusion and banded iron formation, whereas Stott et al. (1989) indicated the presence of massive and pillowed mafic metavolcanic flows, gabbro and iron formation.

Rocks in the vicinity of the Kaw River occurrence are characterized by a strongly developed northeast-striking schistosity that dips steeply (approximately 80) to the northwest. These strongly deformed rocks exhibit extensive silica and carbonate alteration and are part of a deformation area that area extends toward the southwest, to the Pickle Crow Mine area (Young 2003). Shear/breccia zones containing quartz-calcite veinlets and carbonatization were also identified in the drill core for diamond-drill hole KAW-86-5 (Joliffe 1987).

The 2 significant gold-mineralized sections in drill hole KAW-86-5 were described as a portion of a shear zone containing quartz-carbonate bands, and a moderately carbonatized intermediate flow. The highest reported assays from this drill hole were 0.08 ounce per ton gold over 0.7 feet in the shear zone and 0.1 ounce per ton gold over a width of 5 feet in the moderately carbonatized flow.

## McCULLAGH CREEK KAF-87-18 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 295498E 5712200N [occurrence 7 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (SW) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000168 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Kaminiskag assemblage |

Information provided on the Kerr Addison Mines diamond-drill hole log (AFRI# 52P12SW0021) for the McCullagh Creek KAF-87-18 occurrence indicates that it is hosted within mafic metavolcanic rock. No specific information regarding the characteristics of the rock from which the anomalous assay was obtained is provided. However, the drill-hole log does indicate the presence of a fault zone approximately 3.6 m above the section from which the anomalous gold assay was obtained. The fault zone is reported to cover a core length of 6.4 m and contains graphite schist, pyrite stringers, fault breccia, calcite and an unidentified waxy green mineral.

The highest reported assay from this borehole was 1500 ppb Au over a core length of 0.45 feet.

## McCULLAGH CREEK KAF-89-34 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 297690E 5713475N [occurrence 6 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (SW) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Zn |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI000000000169 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Kaminiskag assemblage |

The diamond-drill hole log for DDH KAF-89-34 (AFRI# 52P12SW0012, Minnova Inc. for Kerr Addison Mines Ltd.) indicates a similar stratigraphic sequence to that seen approximately 4 km to the southwest at the McCullagh Creek prospect (MDI52P12SW00013). Stratigraphy in this area consists of interlayered mafic metavolcanic rock, chert, iron formation and felsic metavolcanic rock. The rocks to the northwest are dominated by mafic metavolcanic rock, with increasing quantities of felsic metavolcanic rock toward the southeast. A horizon consisting of chert and iron formation appears to occur at a transition zone between predominantly mafic material and a sequence dominated by felsic tuffs.

The zinc-mineralized horizon at this location is hosted within a stratigraphic unit identified on the diamond-drill hole log (AFRI# 52P12SW0012) as quartz-phyric ash tuff, and consists of thin seams of sphalerite. Some chalcopyrite, pyrrhotite and pyrite have also been reported. This occurrence is based on a reported zinc assay of 2% Zn over an interval of 0.2 feet.

## McCULLAGH CREEK ZINC PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 293900E 5710850N<br>[occurrence 8 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/12 (SW) |
| *MNDM Township:* | McCullagh |
| *Commodities:* | Zn, Cu, Ag, Au |
| *Status:* | Prospect |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P12SW00013 |
| *Subprovince/Belt/Assemblage:* | Uchi / Pickle Lake greenstone belt / Kaminiskag assemblage |

The first report of the potential for economic mineralization in the McCullagh Creek area was provided by Hurst (1931), who described pyrite, pyrrhotite and chalcopyrite mineralization in trenches on a property referred to as the Maloney Claims. This appears to be the only surface exposure of the mineralized horizon that hosts the McCullagh Creek prospect.

Later Minnova diamond-drill logs (AFRI# 52P12SW0070) indicate a relatively complex stratigraphy in this area, consisting of interlayered mafic metavolcanic rock, chert, iron formation and felsic metavolcanic rock. The rocks to the northwest are dominated by mafic metavolcanic rock, with increasing quantities of felsic metavolcanic rock toward the southeast. A horizon consisting of chert and iron formation appears to occur at a transition zone between predominantly mafic material and a sequence dominated by felsic tuffs.

Rocks in the area of the McCullagh Creek prospect generally exhibit north-dipping schistosity and northwest-plunging mineral lineations that conform to the igneous fabrics of the nearby Second Loon pluton. This pluton was interpreted by Stott (1996) to have imposed a contact strain aureole and amphibolite-facies metamorphism within the relatively thin greenstone belt tail that is present at the northeast end of the Pickle Lake greenstone belt. Diamond-drill hole logs from this prospect indicate the presence of a northeast-striking fault that parallels McCullagh Creek. The fault generally crosscuts mafic metavolcanic rock, and is located immediately northwest of the base metal-mineralized quartz-phyric ash tuff horizons. The fault zone is several metres wide and borehole logs indicate that it is characterized by shearing, graphitic and chloritic bands, brecciation, disseminated sulphides and quartz-carbonate veining. Drill-hole logs also commonly indicate the presence of small-scale folds.

Significant zinc, copper and silver mineralization were identified in 10 diamond-drill holes (KAF-86-6 (AFRI# 52P12SW0033); KAF-87-16, KAF-87-17, KAF-88-27, KAF-89-28 (AFRI# 52P12SW0023); KAF-89-29 to -32 and KAF-89-35 (AFRI# 52P12SW0070)) covering a strike length of approximately 850 m. Anomalous gold values have also been reported in some drill-core sections. The mineralization zones are relatively narrow (i.e., generally less than 1.2 m wide), and include pods of massive sulphide, disseminated sulphide and narrow (a few centimetres wide) massive sulphide veins. Mineralization is reported to consist of varying quantities of pyrite (up to 85%), sphalerite (up to 20%), chalcopyrite (up to 5%) and galena (up to 5%). The base metal-mineralized horizons are hosted within stratigraphic units identified as quartz-phyric ash tuff on the Minnova diamond-drill hole logs (AFRI# 52P12SW0070). Janes, Seim and Storey (1993) further indicated that the mineralized exhalative horizon is located within a bed of this material that is in direct contact with the mafic metavolcanic sequence located to the northwest.

Separate pods of massive pyrrhotite have also been reported in the diamond-drill hole sections (AFRI# 52P12SW0070). However, these horizons contain low base metal values and generally appear to be associated with chert and/or iron formation horizons within the mafic metavolcanic rock.

Janes, Seim and Storey (1993) identified 3 hydrothermal alteration assemblages within the felsic metavolcanic horizon that hosts the deposit. The alteration assemblages include sericite + silicification; chlorite + garnet ± biotite ± magnetite ± pyrrhotite ± chalcopyrite; and sericite + muscovite + silicification. The sericite + muscovite + silicification zone is reported to overprint the 2 other assemblages and is considered to be related to contact metasomatism caused by the tonalite intrusion (Second Loon pluton) located to the southeast.

Some of the most notable assays from this prospect include the following: 6.31% Zn, 1.82% Cu and 84 ppm Ag over 0.3 feet in DDH KAF-86-06; 5.05% Zn, 0.9% Cu and 61 ppm Ag over 1.1 feet in DDH KAF-88-27; 2228 ppb Au over 2 feet in DDH KAF-87-27; 2.53% Zn, 0.35% Cu and 35.1 ppm Ag over 2 feet in DDH KAF-89-30.

# MISEHKOW RIVER AREA OCCURRENCES

***Access***: Air access from Armstrong, Pickle Lake or Sioux Lookout.

***Exploration History***: *1968*: Diamond drilling by Sturdy Mines. *1972*: Ground magnetic and electromagnetic surveys by Sturdy Mines. *1977–1978*: Diamond drilling and ground magnetometer survey by Algoma Steel. *1984–1989*: Northern Dynasty Explorations and Ontario Gold Joint Venture carried out an exploration program consisting of geological mapping, airborne and ground geophysics, soil and rock geochemical sampling, diamond drilling and assaying. *1987–1988*: Geophysical surveys and diamond drilling by Dome Exploration. *1996–1997*: Northern Dynasty Minerals carried out additional geophysical surveys and re-assayed diamond-drill core from their 1988–1989 drilling program.

## General Geology

The rocks of the Misehkow River area form part of a metavolcanic and metasedimentary belt described by Sage and Breaks (1982) as the Pashkokogan Lake–Misehkow River belt. This belt is bounded to the north by granitoid rocks of the Kagami pluton and Seach–Achapi granitoid complex (Stott 1996), and to the south by the metasedimentary migmatites of the English River basins. An intrabelt felsic intrusion referred to as the Webb Lake stock is also located in the central portion of the belt. Stott and Corfu (1991) assigned the supracrustal rocks of this belt to the Confederation assemblage (2750 to 2730 Ma) and the St. Joseph assemblage (2723 to 2713 Ma). The boundary between these assemblages is approximately coincident with the course of the Misehkow River.

The rocks of the northern half of the supracrustal belt (i.e., Confederation assemblage), where most of the known mineral occurrences are located, are dominated by mafic metavolcanic rock (pillowed and massive flows). However, the stratigraphy of the area is described by Ho (1989) as including a wide variety of lithologies including mafic to intermediate metavolcanic, felsic metavolcanic and clastic metasedimentary rocks, and banded iron formation. The supracrustal rocks also have been intruded by gabbroic dikes and/or sills.

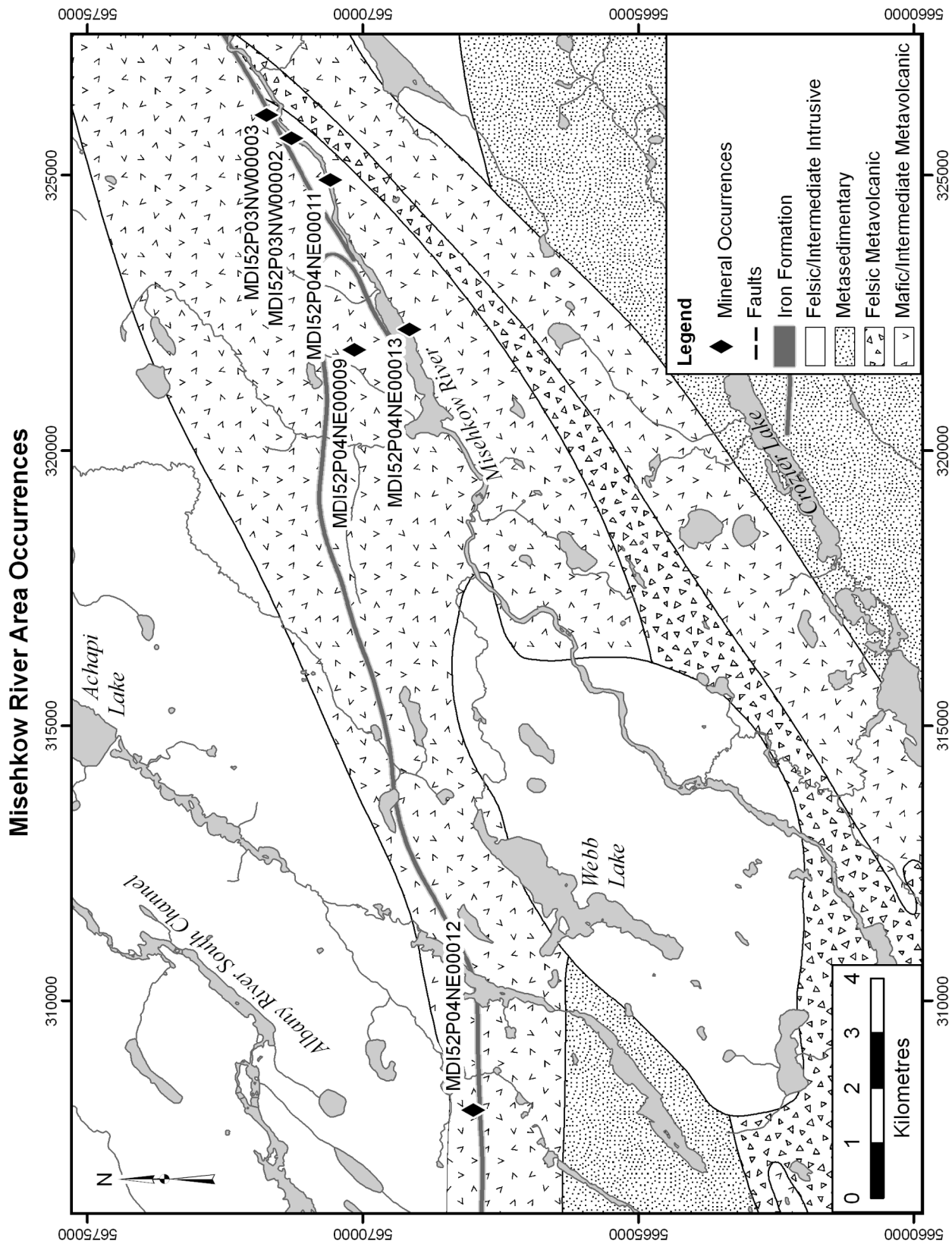
The St. Joseph assemblage rocks located south of the Misehkow River and Webb Lake stock include significant amounts of felsic to intermediate metavolcanic and metasedimentary rocks (Sage and Breaks 1982).

## Structural Geology

Sage and Breaks (1982) indicated that bedding and foliation orientations in the Pashkokogan Lake–Misehkow River belt are generally parallel. Most foliations mapped by Sage and Breaks (1982) in the vicinity of the Misehkow River dip steeply to the north, with an approximate average strike orientation of 240. A synclinal axis trending parallel to foliation was interpreted by Sage and Breaks (1982) to occur approximately parallel to the course of the river. Shearing (likely parallel to the axial plane of the fold) was also noted parallel to the Misehkow River.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 52 P: Misehkow River area occurrences

## DOME MISEHKOW RIVER OCCURRENCES 312-001, 312-004 AND 312-005

| | |
|---|---|
| *Locations:* | 312-001: UTM Zone 16, 324920E 5670593N<br>312-004: UTM Zone 16, 325680E 5671293N<br>312-005: UTM Zone 16, 326098E 5671746N<br>[occurrences 12, 13 and 14, respectively, on Map 2 (back pocket)] |
| *NTS Map Sheets:* | 52 P/4 (NE), 52 P/3 (NW) |
| *MNDM Township Areas:* | Achapi Lake Area, Heather Lake Area |
| *Commodities:* | Au |
| *Status:* | 3 Occurrences |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Numbers:* | 312-001: MDI52P04NE00011<br>312-004: MDI52P03NW00002<br>312-005: MDI52P03NW00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Lake St. Joseph greenstone belt / Confederation–St. Joseph assemblages boundary |

Rocks mapped in the immediate vicinity of the Dome Misehkow River gold occurrences by Sage and Breaks (1982) include mafic metavolcanic (dominant lithology), felsic metavolcanic and clastic metasedimentary rocks and iron formation. Diamond-drill hole logs compiled by Dome Exploration at the site in 1988 provide evidence of relatively complex stratigraphy and strong deformation or alteration. The following lithologies are reported to have been encountered during diamond drilling (9 holes): mafic metavolcanic rock, iron formation, chlorite schist, sericite schist, intermediate tuff, greywacke, rhyolite, and one narrow (1 m intersection) felsic dike.

The Dome Misehkow River gold occurrences are located in rocks immediately adjacent to the Confederation–St. Joseph assemblages boundary. Sage and Breaks (1982) indicated that bedding and foliation orientations in the Pashkokogan Lake–Misehkow River belt are generally parallel. Foliation in felsic metavolcanic rock in close proximity to the occurrence was mapped by Sage and Breaks (1982) as having an orientation of 235/86. Based on the lithological descriptions provided in the Dome Exploration diamond-drill logs, and the relative locations of the occurrences, it is probable that they are associated with an east-northeast-striking structure similar to that hosting the nearby Northern Dynasty Misehkow River prospect (MDI52P04NE00009).

Anomalous gold assays were reported by Dome Exploration from samples collected from 3 diamond-drill holes (312-001, 312-004 and 312-005). The anomalous values in drill hole 312-001 included 1.34 g/t Au over 0.4 m and 0.68 g/t Au over 0.3 m. Both anomalous assays were obtained from material logged as sericite schist. The sericite schist material is reported to be strongly foliated, contains quartz bands and stringers, and is mineralized with minor amounts of pyrite. The sericite schist occurs adjacent to material logged as chlorite schist (altered mafic metavolcanic?) and iron formation.

Anomalous assays of 1.37 g/t Au (over 0.3 m) and 0.68 g/t Au (over 0.4 m) were obtained from drill hole 312-004 from material that was logged as chert-sulphide-amphibole iron formation. The sulphides included pyrrhotite (1%) and pyrite (1%). These iron formation units were also reported to contain quartz-carbonate veining.

A number of anomalous assay results were obtained from diamond-drill hole 312-05, with the highest being 3.42 g/t Au over 0.35 m. These assays were obtained from samples of sulphidized magnetite-chert-amphibole iron formation and chlorite schist. The mineralized iron formation material is reported to contain up to 20% pyrrhotite and 5% pyrite, whereas the mineralized chlorite schist contains abundant quartz-carbonate stringers and disseminated sulphides (up to 3% pyrrhotite, 1% pyrite and trace

arsenopyrite). It is noteworthy that the deformation zone hosting the gold mineralization at the nearby Northern Dynasty Misehkow River prospect is characterized by sericite alteration and silicification, and that gold occurs in sulphidized iron formation and altered mafic metavolcanic rock within that deformation zone.

## MISEHKOW RIVER IRON PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 322202E 5669152N [occurrence 11 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/4 (NE) |
| *MNDM Township Area:* | Achapi Lake Area |
| *Commodities:* | Fe |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI52P04NE00013 |
| *Subprovince/Belt/Assemblage:* | Uchi / Lake St. Joseph greenstone belt / St. Joseph assemblage |

The rocks in the immediate area of this occurrence are dominated by mafic metavolcanic rock (pillowed and massive flows). The mafic volcanic rock are also reported to be intercalated with felsic volcanic flows, tuffs and lapilli tuffs. Diamond-drill hole information interpreted by Sage and Breaks (1982) indicated that the iron formation is generally bounded on both sides by thinly bedded metasedimentary rocks consisting of thinly bedded, graphitic, often siliceous greywacke and sericitic quartzite.

The characteristics of the Misehkow River iron occurrence were inferred by Sage and Breaks (1982) from diamond-drill hole logs prepared by Sturdy Mines (i.e., the deposit does not crop out at surface). The iron formation consists of uniform, well-bedded chert-magnetite layers with minor hematite and sulphide minerals.

The iron formation deposit outlined by Sturdy Mines varies in thickness from 48 to 155 m, and covers a minimum strike length of 1630 m (i.e., it is open to the east and west). Sturdy Mines was reported by Sage and Breaks (1982) to have outlined a 64 555 000 tonne deposit at this location that grades 21% Fe.

## ONTARIO GOLD JOINT VENTURE MISEHKOW RIVER PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 321829E 5670154N [occurrence 10 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/4 (NE) |
| *MNDM Township Area:* | Achapi Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P04NE00009 |
| *Subprovince/Belt/Assemblage:* | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

The stratigraphy of the area immediately surrounding the mineralized structure that hosts the Ontario Gold Joint Venture Misehkow River gold prospect was described by Ho (1989) as including a wide variety of lithologies including mafic to intermediate metavolcanic, felsic metavolcanic and clastic metasedimentary rocks, and banded iron formation. The mafic metavolcanic rock are dominated by massive flows and fine-grained chlorite-carbonate schists, with local observations of pillow and hyaloclastite textures. Ho (1989) also mapped intermediate volcanic rock that have been classified as flows and fragmental units. Outcrops of sericite-feldspar-quartz-carbonate schists have been tentatively

classified as felsic volcanic tuff. Metasedimentary rock units mapped by Ho (1989) in the area consist of intercalated clastic and chemical sediments. The clastic layers include greywacke, arenite and argillite, whereas the chemical sedimentary rocks consist of banded iron formation with varying amounts of magnetite and silica. A large gabbro intrusion was also identified by Ho (1989) in the area immediately to the north of the gold mineralized structure.

Gold mineralization is hosted within an approximately east-northeast-striking deformation zone that crosscuts metavolcanic and metasedimentary rocks (including iron formation). The rocks of this deformation zone were described as quartz-augen schist by Janes, Seim and Storey (1990), and contain up to 10% of 1 to 3 mm blue quartz augen in a matrix of quartz, iron-rich amphibole, and sericite schist. Gold mineralization primarily occurs in sulphidized iron formation (pyrrhotite and pyrite, with occasional arsenopyrite and chalcopyrite) that crosscuts the deformation zone at an oblique angle (Ho 1989). Although zones of massive sulphide have been noted in the iron formation, the best gold assay results from this lithology were reported by Ho (1989) to have been obtained from sections with less than 2% sulphide. Alteration minerals that occur within the deformation zone include sericite, silica and iron carbonate.

Although the altered and deformed iron formation appears to be the primary host for the gold mineralization, significant gold assay results have also been reported from samples of altered mafic volcanic rock. Janes, Seim and Storey (1990) indicated that the areas of significant gold mineralization also have a structural association with the hinge regions of macroscopic folds.

The gold mineralized deformation zone is up to 120 m wide and has been mapped over a strike length of approximately 3 km. The iron formation is completely enveloped by the deformation zone over a strike length of approximately 1000 m (Janes, Seim and Storey 1990). Ho (1989) identified 3 generations of deformation in rocks in this area. The most prevalent structures are associated with what has been interpreted as the second ($D_2$) deformation event. The $D_2$ structures crosscut an earlier $D_1$ deformation fabric that has been identified in iron formation and include a schistosity that is well developed in all lithologies except the northern gabbro, and strikes between 235 and 250 with steep northerly dip. This $S_2$ fabric is axial planar to isoclinal $F_2$ folds whose axes are typically oriented 055/60. Discrete, anastomosing shear zones (<1 m wide) having an approximate strike of 070 that are found within the iron formation have also been interpreted to be related to the $D_2$ deformation event. A third phase of deformation ($D_3$) has been inferred from the presence of a widely spaced fracture cleavage oriented between 005 and 015. Kink bands observed in outcrop have also been interpreted as $D_3$ structures. An approximately north-trending structure that parallels Smoking Jacket Creek and a cliff 300 m west of the identified zone of gold mineralization may represent a late $D_3$ fault.

Anomalous gold mineralization has been reported in intersections from 13 diamond-drill holes that have been drilled through the deformation zone over a strike length of approximately 2.1 km. The most significant assay results include 0.049 ounce per ton gold over 42.3 feet in DDH 88-05, 0.112 ounce per ton gold over 20.4 feet in DDH 88-07, and 0.393 ounce per ton gold over 2.3 feet in DDH 88-12. A number of diamond-drill core samples from the 1988–1989 exploration program were re-assayed in 1996, with the results generally being slightly lower (9.04% on average) than the original assays (Youngman 1998).

## STURDY (HUMMINGBIRD LAKE) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 308017E 5667992N<br>[occurrence 9 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/4 (NE) |
| *MNDM Township Area:* | Achapi Lake Area |
| *Commodities:* | Cu, Ni, Co |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52P04NE00012 |
| *Subprovince/Belt/Assemblage:* | Uchi / Lake St. Joseph greenstone belt / Confederation assemblage |

Mineralization at the Sturdy occurrence is reported to be found within an east-trending gabbro dike. The gabbro intrusion was reported by Sage and Breaks (1982) to be approximately 210 m wide in the area of the occurrence, and it intrudes a foliated fine-grained, leucocratic rock interpreted to be a felsic tuff. Elsewhere in the area, the dominant rock type is reported to be mafic metavolcanic (amphibolitized and foliated). An iron formation was mapped by Sage and Breaks (1982) immediately north of the occurrence, within the metavolcanic rock sequence.

Foliation in the felsic metavolcanic unit immediately north of the occurrence was reported by Sage and Breaks (1982) to have an approximate orientation of 070/60. The gabbro dike that hosts the occurrence becomes more strongly foliated towards its southern contact. The gabbro also contains numerous milky white to rusty quartz veins that are reported to be oriented either concordant or subcordant to the foliation (Sage and Breaks 1982).

Copper-nickel-cobalt mineralization was reported by Sage and Breaks (1982) to occur exclusively within the gabbro intrusion. The mineralization is localized near the northern contact, and has been traced for a strike length of approximately 90 m. The width of the mineralized zone varies from up to 4.5 m in the east end of the trenched area to 0.3 m in the west end. The mineralization largely consists of disseminated pyrrhotite and chalcopyrite. Pyrrhotite was reported by Sage and Breaks (1982) to be the dominant sulphide mineral, and was present at concentrations that rarely exceed 3 to 4%.

The best assay results reported from grab samples collected by Sage and Breaks (1982) were 0.48% Cu and 0.17% Ni. Earlier samples collected by Sturdy Mines and reported in Shklanka (1969) indicated a best assay of 1.22% combined Cu+Ni across 15 feet.

# AUGUST LAKE–BEAVIS LAKE AREA OCCURRENCES

***Access***: Air access.

***Exploration History***: *1962–1969*: Geophysical surveys and diamond drilling by Standard Iron Mines and Algoma Steel.

## General Geology

The northern portion of the English River basins (i.e., immediately south of the Uchi domain) in the area between August Lake and Beavis Lake is characterized by the presence of fine-grained clastic metasedimentary rocks that have been pervasively transformed by amphibolite-facies metamorphism to biotite-quartz-plagioclase schists and gneisses (Sage and Breaks 1982). These metasedimentary rocks are notable in that they are interbedded with a number of significant banded iron formation units.

## Structural Geology

Stratigraphy and foliation in the metasedimentary rocks of the August Lake–Beavis Lake area generally strikes east-northeast.

## Deposit Geology

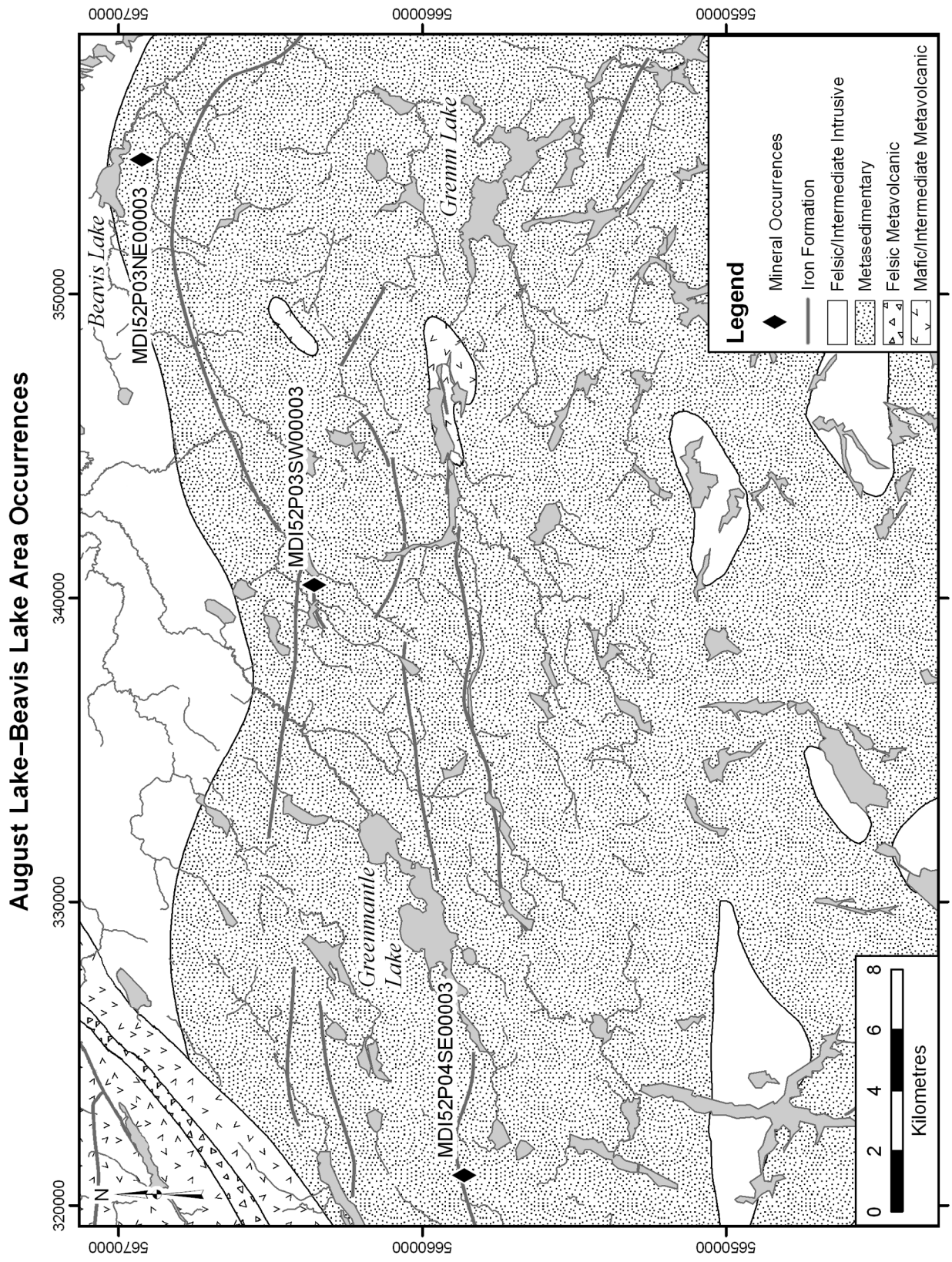
The geology of each of the individual deposits is described below.

## AUGUST LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 321001E 5658618N<br>[occurrence 15 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/4 (SE) |
| *MNDM Township Area:* | August Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI52P04SE00003 |
| *Subprovince/Belt/Assemblage:* | English River basins |

The August Lake occurrence was described by Shklanka (1968) as an iron formation consisting of 2 zones that are approximately 1600 by 60 m and 850 by 45 m. These zones were delineated during a ground magnetometer survey. The stratigraphic log for Algoma Steel diamond-drill hole AL-6-69 indicates that approximately 35 m of iron formation was encountered. Hornblende-biotite schist was logged above (south) of the iron formation, whereas olivine gabbro was noted below (north).

This occurrence is located in a similar setting to that found nearby at Heart Attack (Beavis) Lake (Sage and Breaks 1982).




NTS 52 P: August Lake–Beavis Lake area occurrences

## GREENMANTLE LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 340445E 5663546N [occurrence 16 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/3 (SW) |
| *MNDM Township Area:* | Greenmantle Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI52P03SW00003 |
| *Subprovince/Belt/Assemblage:* | English River basins |

This occurrence was described by Shklanka (1968) as an iron formation comprising quartz, muscovite, biotite and differing amounts of magnetite (up to 70%) and hematite (up to 15%). The magnetite occurs as disseminated grains or in bands up to 2 m wide. The iron formation occurs within a migmatitic complex and ranges from 90 to 300 m wide.

This occurrence is located in a similar setting to that found nearby at Heart Attack Lake (Sage and Breaks 1982).

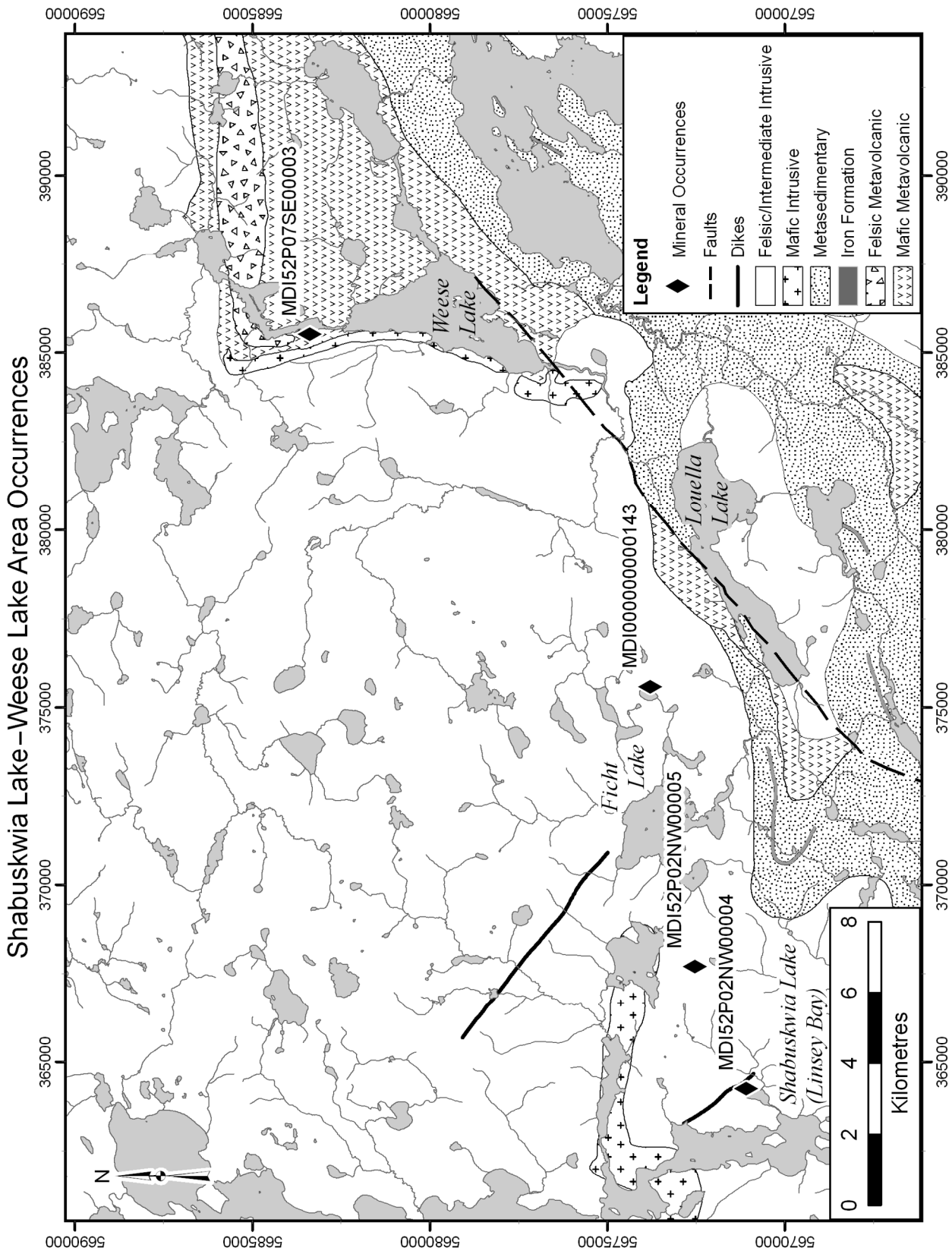
## HEART ATTACK (BEAVIS) LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 354463E 5669231N [occurrence 17 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/3 (NE) |
| *MNDM Township Area:* | Beavis Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI52P03NE00003 |
| *Subprovince/Belt/Assemblage:* | English River basins |

This occurrence was described by Shklanka (1968) as a magnetite-quartz iron formation interbedded with metasedimentary rocks. The iron formation was also reported to contain some hematite, pyrrhotite and pyrite. Sage and Breaks (1982) further described the iron formation as consisting of massive and banded components. The massive component consists of light to medium smoky grey iron formation with clastic quartz and plagioclase uniformly distributed among the dominant magnetite grains. The banded units are characterized by alternating black to smoky grey magnetite-rich bands and light brown to light grey magnetite-bearing bands of garnetiferous metagreywacke.

The iron formation at Heart Attack Lake was reported by Sage and Breaks (1982) to exhibit outcrop-scale S-folds having near-vertical axial planes and steep, east-plunging fold axes. The depositional setting for this deposit was described by Sage and Breaks (1982) as the result of the transport of detrital magnetite and volcanogenic debris of greywacke bulk composition to the flanks of an extensive eugeosyncline.

Sage and Breaks (1982) indicated that a section of massive to banded iron formation approximately 180 m thick is present at the eastern end of Heart Attack Lake. A 22 kg bulk sample of the material collected by Sage and Breaks (1982) was also reported to have assayed 31.2% Fe. The area of this occurrence has been pervasively injected by *lit-par-lit* and discordant xenolith-bearing masses of coarse-grained to pegmatitic granitic rocks (Sage and Breaks 1982). These intrusive rocks are typical of those found throughout the English River basins, and are likely to make any ore reserve calculations more difficult.




NTS 52 P: Shabuskwia Lake–Weese Lake area occurrences

# SHABUSKWIA LAKE–WEESE LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *1999*: K. Fenwick conducted prospecting. *2003–2004*: East West Resource Corporation carried out an exploration program over a portion of the area that consists of airborne geophysical surveys (magnetic and electromagnetic), diamond drilling and assaying.

## General Geology

The Shabuskwia Lake–Weese Lake area is located within the transition zone between the Uchi domain (volcano-plutonic) to the north and the English River basins (metasedimentary) to the south. Rocks of the western portions of this area are dominated by massive biotite and biotite-hornblende granite of the Shabuskwia Lake batholith (Wallace 1980, 1981a) and metasedimentary migmatite (Thurston, Carter and Riley 1972). The area is bounded to the east by supracrustal rocks (predominantly metavolcanic rock) of the Miminiska–Fort Hope greenstone belt. Several copper-nickel occurrences have been documented in this area near the southern and eastern margins of the Shabuskwia Lake batholith within a series of anorthositic gabbro intrusions. Mason et al. (2000) interpreted this series of occurrences to be associated with a continuous 600 to 700 m thick anorthositic gabbro sill.

## Structural Geology

Through mapping, Wallace (1981a) inferred the presence of a major syncline with a northwesterly trending axis to the east of Weese Lake. A number of west-northwesterly striking faults and lineaments were also mapped by Wallace (1980, 1981a) in the supracrustal rocks to the east.

## Deposit Geology

The geology of each of the individual deposits is described below.

## GOULD LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 367708E 5672540N [occurrence 19 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/2 (NW) |
| *MNDM Township Area:* | Ficht Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52P02NW00005 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / English River basins boundary |

McCombe (1961) described the main rock type in the mineralized zone as anorthosite with large plagioclase feldspar crystals, hornblende and augite. The anorthosite body was estimated to have a north to south extent of approximately 1.2 km, and an east to west extent in excess of 1.6 km. Other rock types observed in the immediate vicinity of the mineralization included diorite, hornblende-mica schist and pegmatite.

McCombe (1961) indicated that the anorthosite has been fractured by strong shearing (3 shear zones were identified) having a general orientation of 120°. Narrow diorite dikes (<1 m) intrude the anorthosite parallel to the shear zones. Hornblende-mica schist also occurs within the shear zones, and has been interpreted as sheared mafic dike material. The available information suggests that the occurrence of copper-nickel mineralization at this location is influenced by the presence of these shear zones.

Mineralization consists of chalcopyrite, pyrrhotite, pentlandite and minor pyrite as disseminations and irregularly distributed blebs in anorthosite and hornblende-mica schist. The pyrrhotite and pentlandite were interpreted to be primary in origin, whereas the chalcopyrite was interpreted to be secondary (i.e., replacing pyrrhotite). Grab samples were reported by McCombe (1961) to have been collected from 3 test pits, with the best assays of 1.87% Cu and 0.18% Ni being reported from a sample collected at the contact between anorthosite and diorite.

## LEITCH

| | |
|---|---|
| *Location:* | UTM Zone 16, 364251E 5671085N [occurrence 18 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/2 (NW) |
| *MNDM Township Area:* | Ficht Lake Area |
| *Commodities:* | Cu, Ni, Co |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52P02NW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / English River basins boundary |

Thomson et al. (1957) indicated that the occurrence was found in an outcrop of anorthositic gabbro. Mineralization consist of chalcopyrite, pyrrhotite and pyrite, with the best reported assays being 2.3% Cu, 0.63% Ni and 0.26% Co.

## LUELLA LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 375600E 5673800N [occurrence 20 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/2 (NW) |
| *MNDM Township Area:* | Ficht Lake Area |
| *Commodities:* | Cu, Ni |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI000000000143 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / English River basins boundary |

The Luella Lake occurrence is located near the southern margin of the Shabuskwia Lake batholith. Rocks in the immediate vicinity of the deposit have been described by Barker (1972) and Caven (2003) as gabbro, ultramafic intrusive, granite and metamorphic rock. Recent drill-hole logs prepared for East West Resource Corporation (Cascadia International Resources and East West Resource Corporation 2004) describe a sequence consisting of granitic pegmatite, gabbro, pyroxenite, felsic volcanic, and intermediate to mafic metavolcanic rocks.

Barker (1972) described the main surface showing as being located within gabbro, near the contact with an “inlier” of metamorphic rock (volcanics?) that is located to the north of the showing. More recently, Caven (2003) described the host rock as a gabbro-pyroxenite that has been metamorphosed to a

hornblende-biotite-chlorite schist. Barker (1972) indicated that the gabbro has a crude compositional banding and schistosity that ranges in orientation from 110 to 130, with a near-vertical dip. However, the electromagnetic anomaly drilled by East West Resource Corporation at this location is oriented east-northeast, most likely parallel to the contact between the anorthosite and metavolcanic rock (Cascadia International Resources and East West Resource Corporation 2004).

The sulphide mineralization is generally described as being finely disseminated and interstitial to the silicates, with occasional larger sulphide "blebs". Remobilization of sulphides along shears was also noted. Recent drill-hole logs (Cascadia International Resources and East West Resource Corporation 2004) indicated that the most significant copper and nickel mineralization occurs in altered (chlorite) pyroxenite near the contact with a unit logged as felsic volcanic rock (perhaps the same unit described as a metamorphic inlier by Barker (1972)). Sulphide mineralization consists of disseminated to stringer pyrrhotite, chalcopyrite and pentlandite. Fragments of partially assimilated felsic volcanic rock are reported to be present in the mafic intrusion. The felsic volcanic unit is also reported to contain disseminated chalcopyrite and sericite. The most significant assays reported from this occurrence include the following results: 5.6% Cu over 2.4 feet in Getty drill hole LL2; >1% Cu over 3.3 feet in East West drill hole L04-04; 1.31% Ni over 4 feet in Getty drill hole LL1; and 0.53% Ni over 4 feet in East West drill hole L-04-02.

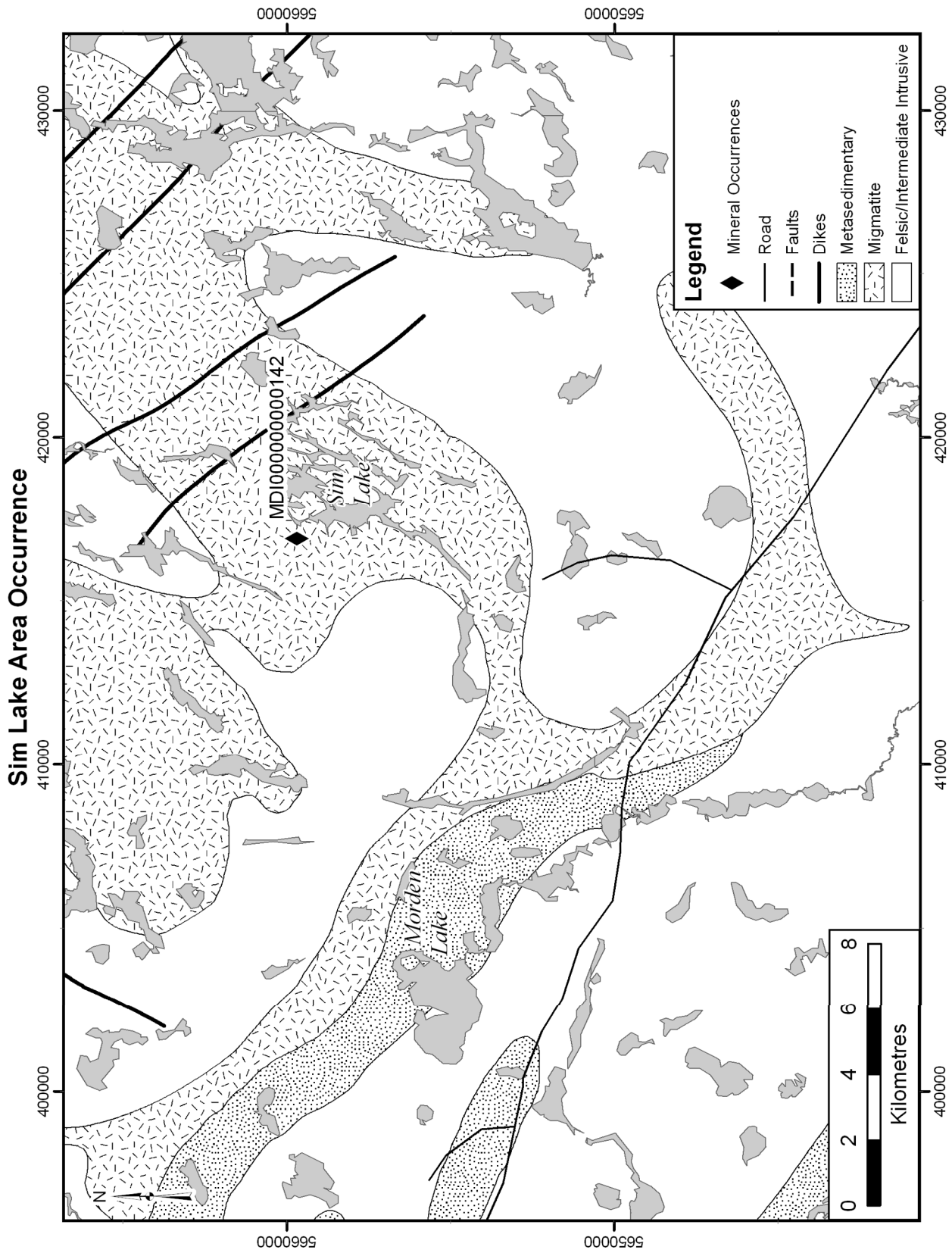
## WEESE LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 385527E 5683392N [occurrence 21 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/7 (SE) |
| *MNDM Township Area:* | South of Keezhikuns Creek Area |
| *Commodities:* | Cu, Ni, Au, Ag |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI52P07SE00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / English River basins boundary |

The Weese Lake occurrence is located near the southern margin of the Uchi domain within an anorthosite to anorthositic gabbro intrusion. The anorthosite body is an approximately 600 to 700 m wide sill-like intrusion that is bounded to the west by granitic rock of the Shabuskwia Lake batholith and to the east by a supracrustal sequence dominated by mafic to intermediate metavolcanic rocks. However, the eastern intrusive contact in the vicinity of the occurrence is with a thin sequence of metasedimentary rock mapped by Wallace (1981a) as quartz-feldspar-biotite schist.

Mineralization within the anorthosite was summarized by McNamee (1962) as consisting of sparsely disseminated chalcopyrite and pyrrhotite (nickeliferous). The mineralization occurs in a zone that parallels the contact between the anorthosite and metasedimentary rock for a strike length of approximately 700 m. Higher concentrations of mineralization occur in shears containing chalcopyrite mineralized quartz and quartz-tourmaline veins. The most significant copper showing (Cryderman showing) occurs within one of these mineralized deformation zones. The Cryderman showing was described by McNamee (1962) as occurring in a quartz-filled shear striking between 160 and 138 across anorthosite and gabbro. This zone contains 4 to 6% chalcopyrite over a width of 60 cm to 1 m, and is exposed for a strike length of approximately 30 m. Other chalcopyrite mineralized shears found further to the south are indicated to strike between 120 and 165.

The most favourable surface sample assay results obtained from the area were 10.8% Cu, 0.09 ounce per ton gold and 1.55 ounce per ton silver in a sample of chalcopyrite float found along the west shore of Weese Lake. The most favourable assay reported from the 1963 diamond-drilling program conducted by New Jersey Zinc was 1.75% Cu over 2.4 feet, immediately below the Cryderman showing.




NTS 52 P: Sim Lake area occurrence

# SIM LAKE AREA OCCURRENCE

***Access***: Summer access via float-equipped aircraft or helicopter. Winter via snow machine from nearby Buchanan Forest Products access road.

***Exploration History***: *1970*: Addicks Canadian Properties conducted a ground magnetic survey that identified a magnetic high centred over a small mafic intrusion where trenching had previously identified disseminated chalcopyrite and nickeliferous pyrrhotite mineralization. No assay values were provided in the geophysical assessment report. *1995*: Trenches were sampled by Golden Trump Resources. Best assays were 0.46% Cu and 0.24% Ni. *1998 to Present*: VLF–EM and magnetometer surveys, prospecting, trenching, sampling and geological mapping were carried out for B. Smith and D. Thibeault.

## General Geology

The occurrence is hosted in a mafic intrusion. The mineralized intrusion consists of 2 phases, with a gabbro core and an outer zone consisting of pyroxenite (Spence 1999). The main intrusion is exposed at surface as an approximately 300 m circular body. A narrow dike-like portion of the mineralized intrusion extends northwest of the main body for a distance of at least 800 m. The intrusion has varying textures, with fine-grained and pegmatitic phases reported by Mason et al. (1999). In a regional context, the mineralized intrusion is hosted within non-mineralized gabbro and granitic migmatites.

## Structural Geology

Spence (1999) indicated that the migmatites surrounding the mineralized mafic intrusion are highly deformed, with local open folds and variable foliation. However, the mineralized intrusion crosscuts the migmatites and shows a much lower degree of deformation. Therefore, the emplacement of the mineralized intrusion is interpreted to postdate that of the surrounding migmatites. A late deformation event produced a fabric oriented at approximately 50 to 60° that is filled by thin (2 to 15 cm wide) quartz veins that crosscut all lithologies. This deposit is one of several Ni-Cu-PGE occurrences that are found in late mafic to ultramafic intrusions that occur near the Uchi domain–English River basins boundary.

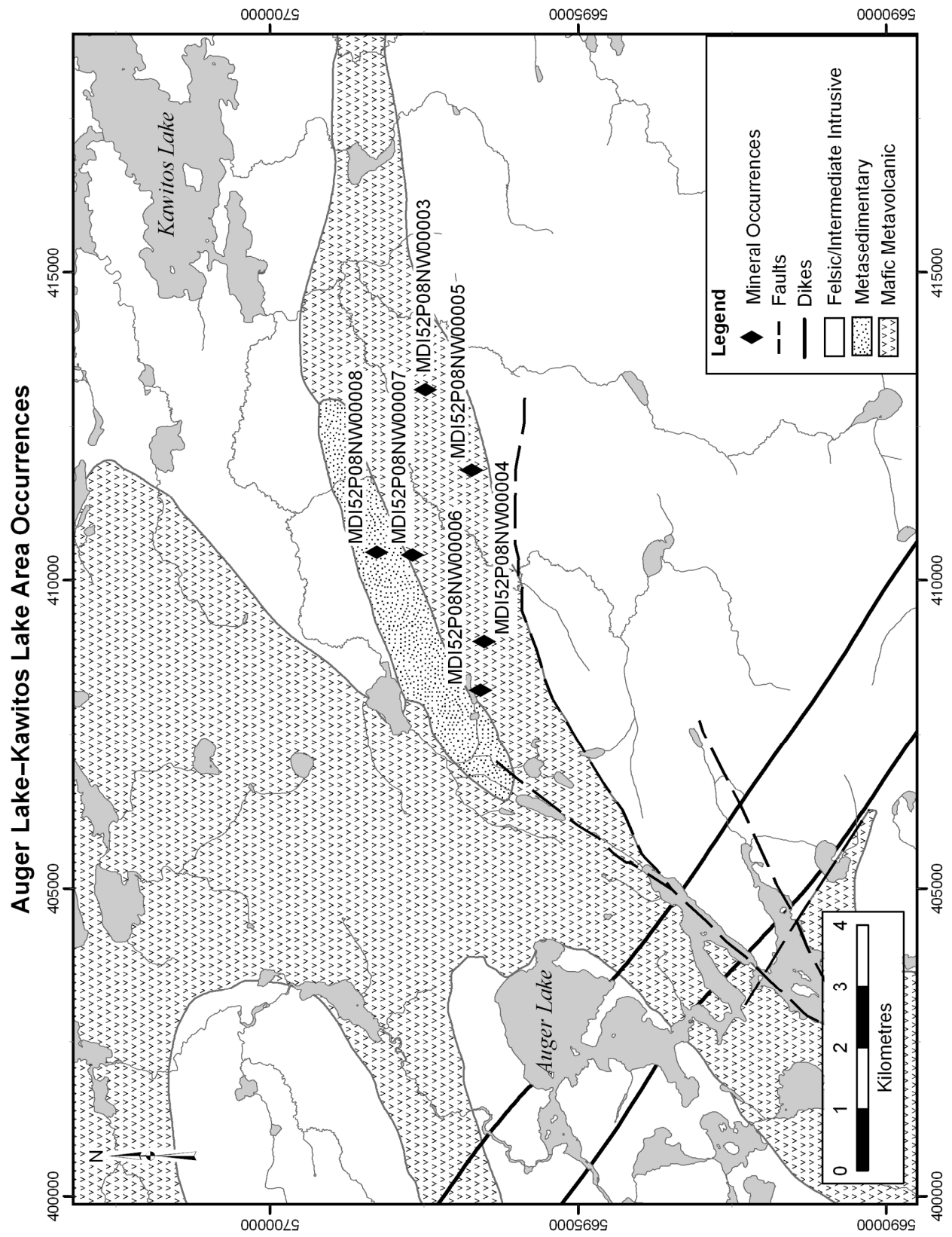
## Deposit Geology

The geology of the deposit is described below.

## SIM LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 416900E 5659700N<br>[occurrence 22 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/1 (SE) |
| *MNDM Township Area:* | Sim Lake Area |
| *Commodities:* | Ni, Cu, Co, PGE |
| *Status:* | Occurrence |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI000000000142 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope / English River basins boundary |

Mineralization occurs as disseminated (approximately 1 to 5%) chalcopyrite, pyrrhotite, pentlandite and pyrite throughout the gabbro and pyroxenite phases (Spence 1999). Chlorite alteration was noted by Mason et al. (1999). The best assays reported by Spence (1999) were grab samples indicating 0.984% Ni, 0.813% Cu, 0.03% Co and 1.3 g/t PGE. Assay results from samples collected by the OGS in 1998 included the following 3701 ppm Cu, 4345 ppm Ni, 1887 ppm Cr, 181 ppm Co, 0.9 ounce per ton silver, 45 ppb Au, 133 ppb Pt and 110 ppb Pd (Mason et al. 1999).




NTS 52 P: Auger Lake–Kawitos Lake area occurrences

# AUGER LAKE–KAWITOS LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *1996*: Diamond drilling by Noranda Mining and Exploration.

## General Geology

A number of notable base metal occurrences (Boylen occurrences) are hosted in a relatively narrow belt of metavolcanic rock between Auger Lake and Kawitos Lake that is bounded to the north, south and east by felsic intrusions. Edwards (1991) subdivided the rocks of this area into 5 geological domains: "Western Volcanic", "Central Volcanic" and "Cormac Volcanic" domains, "Southern Granitic terrain" and "Northern Granitic terrain". The strike direction of the metavolcanic rock units is influenced by the geometry of the granitic batholiths located to the south and north, and varies from northeast in the western part of the area to east in the eastern part.

Edwards (1991) indicated that the Western Volcanic domain is composed of mafic metavolcanic rock that include massive and pillowed flows, as well as tuff. These rocks are bounded to the southeast by the Central Volcanic domain and a significant structure referred to as the Auger shear (Edwards 1991).

The rocks of the Central Volcanic domain include felsic tuff and reworked felsic sediments (Edwards 1991). The most notable feature of these rocks is the common occurrence of anastomosing brickwork-style, fracture-controlled chlorite-amphibole-garnet-magnetite alteration. Brickwork-style alteration was noted in most outcrop exposures, and the intensity of alteration is most pronounced in the vicinity of the Auger shear. This type of alteration has only been noted in rocks of the Central Volcanic domain, and was interpreted by Edwards (1991) to be related to late structural events that produced the shear zone (i.e., not related to massive sulphide mineralization).

The Central Volcanic domain is bounded to the southeast by rocks of the Cormac Volcanic domain. Edwards (1991) indicated that this domain is composed of a variety of lithologies, including mafic metavolcanic flows (massive and pillowed), felsic tuff (crystal and lapilli), debris flows and massive biotitic units (possibly metamorphosed interflow sedimentary layers that commonly contain pyrrhotite and chalcopyrite). The majority of the surface exposures of volcanogenic massive sulphide (VMS) mineralization in this area (i.e., Boylen, Ryley–Cormac, Gold Fields, NJZ-76 and Nyla occurrences) have been found within rocks of the Cormac Volcanic domain. Metamorphosed equivalents of possible VMS-related alteration zones in the Cormac Volcanic domain were recognized by the presence of chlorite-garnet, chlorite-amphibole-garnet and staurolite-garnet mineral assemblages (Edwards 1991). These alteration zones exhibit strong iron enrichment, sodium-calcium depletion and were generally copper enriched. In drill hole PO-5, a 100 m alteration zone exhibiting significant copper enrichment was encountered. This feature was hypothesized by Edwards (1991) to possibly represent a hydrothermal pipe.

The Southern Granitic terrain, which forms the southern boundary of the Cormac Volcanic domain, is a coarse-grained quartz-feldspar-biotite intrusion. Edwards (1991) indicated that this intrusion contains chalcopyrite-bearing chlorite pods (Alpamayo occurrence) and fracture-associated coarse-grained chlorite-biotite-garnet alteration near the contact with the Cormac Volcanic domain. The felsic intrusive rocks of the Southern Granitic terrain were classified as being part of the Hurst Lake batholith by Wallace (1981a).

Rocks of the Northern Granitic terrain, which forms the northern boundary of the Central Volcanic and Cormac Volcanic domains was also indicated by Edwards (1991) to be a coarse-grained quartz-feldspar-biotite intrusion. This intrusion was mapped by Wallace (1978c, 1981b) as the Kawitos Lake batholith.

## Structural Geology

The rocks of the Western Volcanic, Central Volcanic and Cormac Volcanic domains form a single west- to southwest-trending volcanic rock sequence (Edwards 1991). Foliations are steeply dipping and generally parallel the volcanic domain boundaries, with strike directions ranging from 030 in the southwest to 080 in the east. According to Edwards (1991), younging indicators interpreted from rocks of the Cormac Volcanic domain generally suggest that the volcanic stratigraphy faces south. However, the results of detailed geological mapping in the vicinity of the Gold Fields and Ryley–Cormac occurrences indicate the presence of a southwest-plunging synformal fold axis within the Cormac Volcanic domain. This structure may represent the same regional-scale syncline mapped southwest of the Boylen occurrences by Wallace (1981a). If this interpretation is correct, the Cormac Volcanic domain would appear to be younger than the Western Volcanic and Central Volcanic domains.

A significant northeast-striking shear zone, referred to as the Auger shear by Edwards (1991), has been inferred to be located at the contact between the Western Volcanic and Central Volcanic domains. The same structure was mapped by Wallace (1981a) further to the southwest.

The rocks that host the Boylen occurrences were classified by Stott and Corfu (1991) as being part of the St. Joseph assemblage.

## Deposit Geology

The geology of each of the individual deposits is described below.

### BOYLEN, M.J.

| | |
|---|---|
| *Location:* | UTM Zone 16, 413100E 5697475N<br>[occurrence 28 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NE) |
| *MNDM Township Area:* | Kawitos Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Boylen occurrence is hosted within mafic volcanic rock of the Cormac Volcanic domain. The host rock was described by Mason and White (1995) as fine-grained mafic pillowed flows with zones of medium- to coarse-grained amphibole-chlorite, magnetite-chlorite and garnet alteration. Surface mineralization occurs as localized patches of chalcopyrite, pyrite, sphalerite, pyrrhotite and galena.

Diamond drilling carried out by M.J. Boylen Engineering in 1961 was reported to have encountered a wide carbonate alteration zone containing disseminate sulphides. A 10 m wide zone of massive magnetite containing accessory chalcopyrite and pyrrhotite (up to 4.01% Cu over 0.61 m) was also reported in the drilling (AFRI# 52P08NW9655).

## DOORIGAN PROPERTY (ALPAMAYO) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 411800E 5696725N [occurrence 27 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NW) |
| *MNDM Township Area:* | Petawanga Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00005 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Doorigan property (Alpamayo) occurrence is located in the Southern Granitic terrain and was described by Edwards (1991) as 2 small 0.5 m wide chalcopyrite-bearing chlorite pods located within granite. The mineralization is interpreted to be related to coarse-grained fracture-controlled chlorite-biotite-garnet alteration zones that have been observed in the granite to the west of the showing. The strike direction of these fractures ranges from 100 to 120.

## GOLD FIELDS OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 409010E 5696525N [occurrence 24 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NW) |
| *MNDM Township Area:* | Petawanga Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Gold Fields occurrence is located within the Cormac Volcanic domain, and was reported by Edwards (1991) to consist of pervasive stringer chalcopyrite mineralization and chlorite-garnet alteration within quartz phyric felsic metavolcanic rock. An assay of 15.7% Cu, 0.62% Zn and 2.75 ounces per ton silver over 0.31 m was reported at this showing in Falconbridge diamond-drill hole PO-7 (Mason and White 1995).

## NJZ-76 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 410410E 5697685N [occurrence 26 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NW) |
| *MNDM Township Area:* | Petawanga Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00007 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The NJZ-76 occurrence is located within the Cormac Volcanic domain, and was reported by Edwards (1991) to consist of disseminated chalcopyrite mineralization and coarse-grained amphibole alteration within massive to pillowed mafic volcanic rocks. An exposure of strongly sericitized quartz-phyric felsic volcanic rock containing approximately 2% sulphides (pyrite and pyrrhotite with trace chalcopyrite) occurs approximately 100 m southwest of the surface exposure of the occurrence.

The most significant assay result reported for this occurrence by Mason and White (1995) was 0.79% Cu from a surface grab sample collected by Falconbridge during their 1991 exploration program.

## NYLA OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 410460E 5698270N<br>[occurrence 25 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NW) |
| *MNDM Township Area:* | Petawanga Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00008 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Nyla occurrence is located within the Cormac Volcanic domain, and was reported by Edwards (1991) to be a small sulphide exposure containing thin (3 to 10 mm wide) bands of fine-grained sphalerite within a biotite-rich interflow sediment near the contact between mafic and felsic metavolcanic rocks. The most notable reported assay from this location was 1.63% Zn from a surface grab sample.

## RYLEY–CORMAC OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 408225E 5696580N<br>[occurrence 23 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/8 (NW) |
| *MNDM Township Area:* | Petawanga Lake Area |
| *Commodities:* | Cu, Zn, Pb, Ag, Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Volcanogenic Massive Sulphide |
| *MDI Reference Number:* | MDI52P08NW00006 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Ryley–Cormac occurrence is hosted within volcanic rock of the Cormac Volcanic domain. The surface expression of this showing was described by Mason and White (1995) as consisting of 2 thin, discontinuous, silicified biotite-rich (possibly exhalative) zones containing trace chalcopyrite and sphalerite. Adjacent rock types are described as mafic tuff and pillowed mafic volcanic rock. Thin (10 mm) wide bands of remobilized massive sphalerite are also present within the mafic volcanic rock in close proximity to the silicified zone. A sample from this occurrence containing massive sphalerite was reported by Mason and White (1995) to have assayed 26.01% Zn.

Felix (1996) interpreted the Ryley–Cormac occurrence as being associated with a single horizontal loop electromagnetic (HLEM) anomaly referred to as the South Main anomaly. This anomaly extends for a strike length of almost 2 km to the southwest of the surface showing, and was tested by 6 diamond-drill holes between 1991 and 1996 (Falconbridge and Noranda). These drill holes include PO-3, PO-4, PO-5 and PO-6, PO-95-12 and PO-96-14. All drilling encountered disseminated VMS-type mineralization, with the most notable assay being 2.09% Cu and 32 g/t Ag over 1.27 m in drill hole PO-6, located approximately 1 km southwest of the surface showing. Earlier diamond drilling carried out by Boylen Engineering (drill hole 343-3), approximately 250 m southwest of the surface showing, reported an assay of 4.27% Zn over 3 m (Mason and White 1995). Lithologies reported from diamond drilling include rhyodacitic agglomerate, garnet-chlorite schist and mafic to intermediate metavolcanic flows (Mason and White 1995).

# TALBOT LAKE AREA OCCURRENCE

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *1999–2000*: Denison Mines carried out a program consisting of geological mapping, diamond drilling and assaying.

## General Geology

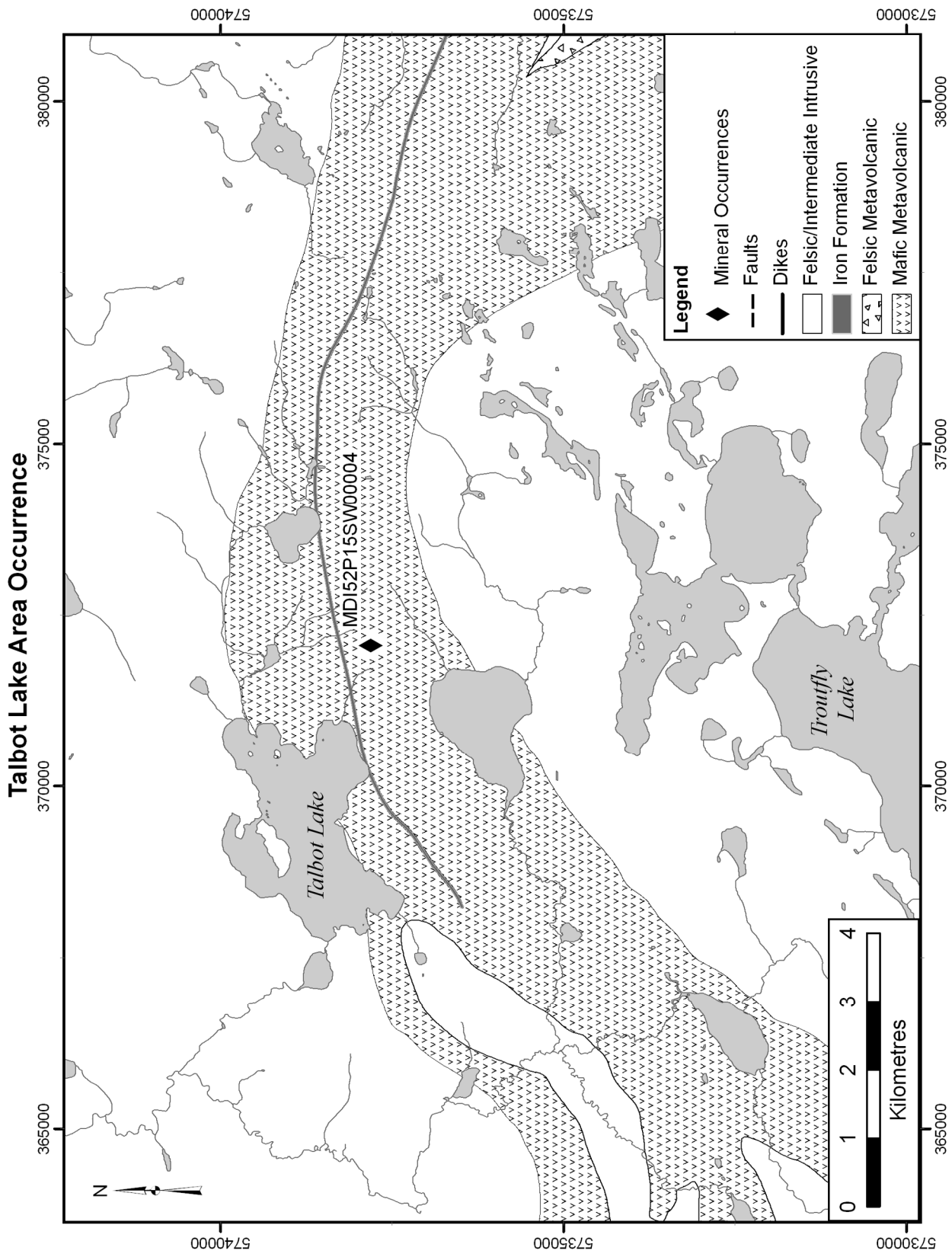
The Talbot Lake area is located in the northern portion of the Miminiska–Fort Hope greenstone belt. The rocks of this area were identified by Stott and Corfu (1991) as being part of a mafic metavolcanic rock-dominated supracrustal assemblage that may be correlative with the Mesoarchean Pickle Crow and Woman assemblages of the Pickle Lake greenstone belt. Placer Dome Inc. (1990) indicated that the northern and eastern portions of the supracrustal rock sequence in this area consist of southward-facing, foliated, mafic to intermediate volcanic rocks. The volcanic rock was intruded by a number of felsic dikes that trend subparallel to the foliation, which strikes between 070 and 110 and has near-vertical dip. The dikes are interpreted to be related to a batholithic complex located to the south and west of Talbot Lake. The southern and western portions of the area are reported to be underlain by the contact zone between the mafic to intermediate metavolcanic rocks and the granitic intrusive rocks of the Troutfly Lake batholith (Placer Dome Inc. 1990). This contact zone consists of a mixture of granitic rock and blocks of amphibolitized volcanic rock.

## Structural Geology

Stratigraphy and foliation in the Talbot Lake area are typically subparallel and strike in a more-or-less east orientation. A mineralized quartz vein at Talbot Lake is hosted within a steeply dipping, east striking structure (Placer Dome Inc. 1990). The mineralized zone is, in turn, crosscut by a later north-northeast-striking fault that may be related to the gold mineralization. Similar approximately northeasterly striking faults are commonly observed elsewhere in the Miminiska–Fort Hope greenstone belt.

## Deposit Geology

The geology of the deposit is described below.



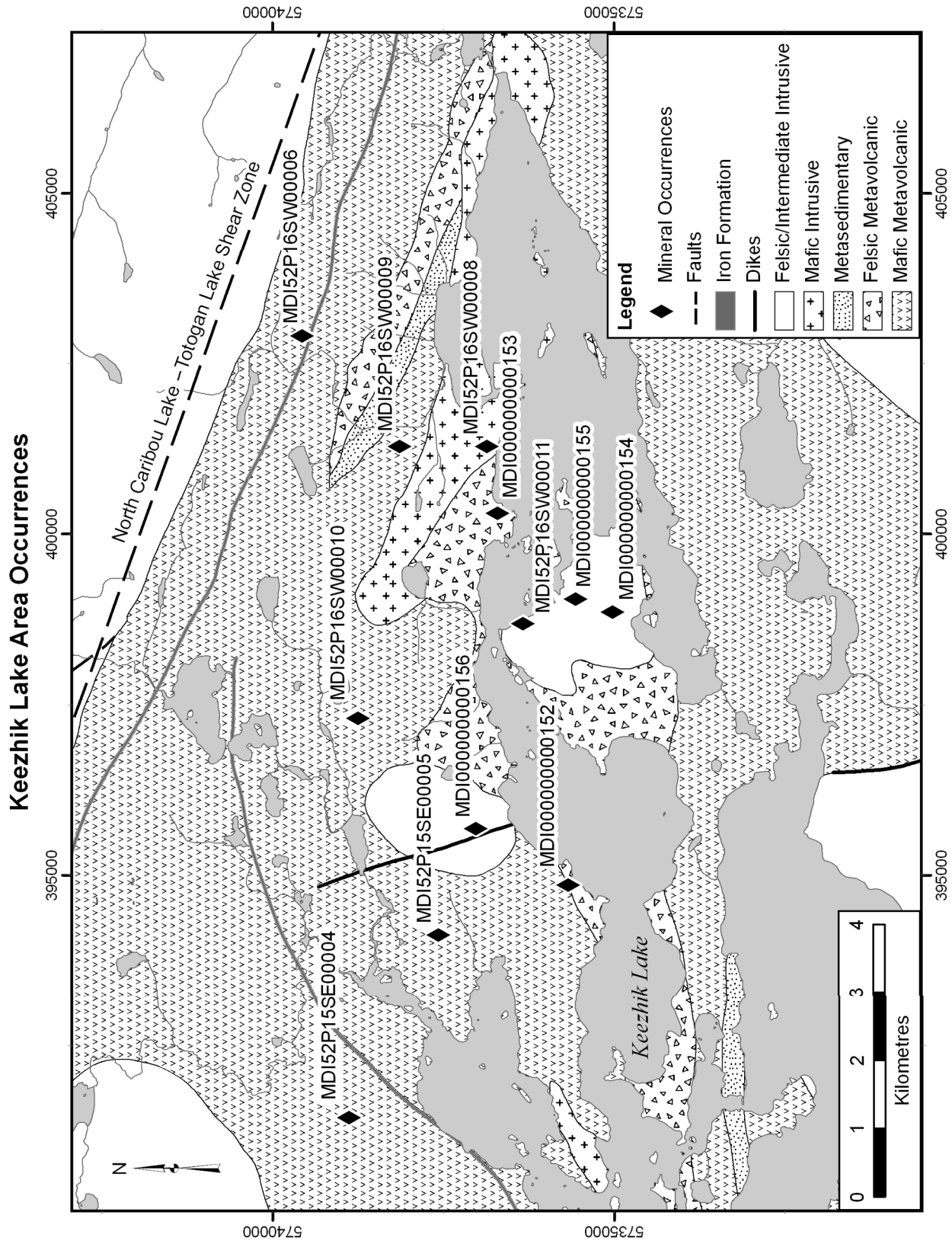

NTS 52 P: Talbot Lake area occurrence

## TALBOT LAKE PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 372053E 5737815N<br>[occurrence 29 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/15 (SW) |
| *MNDM Township Area:* | Talbot Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number:* | MDI52P15SW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

Placer Dome Inc. (1990) indicated that the main mineralized zone (Main Zone) at the Talbot Lake prospect is an east-striking quartz vein that dips vertically to steeply south and plunges 80° to the west. The vein material is white to translucent and contains 5 to 25% feldspar. Disseminated pyrrhotite, pyrite, sphalerite, chalcopyrite, native gold and tourmaline are reported to be present in the vein material. Pyrrhotite is the most abundant sulphide mineral (up to 3%), and is often observed to be in direct contact with visible gold. A several metres-wide sulphide zone (15% pyrrhotite, with minor pyrite, chalcopyrite and sphalerite) is reported to be present in the mafic volcanic rock adjacent to the Main Zone. This unit contains anomalous gold values, especially where crosscut by quartz veining.

The Main Zone is crosscut by a north-northeast-striking fault near its eastern limit. A separate mineralized structure, referred to as the East Zone, is located immediately to the east of the fault. Channel sampling reported by Denison Mines Limited (1999) indicates that the surface strike length of the main zone is 48 m, with a weighted average of 13.8 g/t Au over a width of 3.28 m. The results of previous diamond drilling by Placer Dome Inc. (1990) indicate that the zone extends to a depth of at least 194 m below surface. Placer Dome Inc. (1990) reported significant assays (i.e., <1 g/t Au) from 14 diamond-drill holes, with the most notable intersection being 37.19 g/t Au over 2.52 m. A six-hole diamond-drill program carried out at Talbot Lake in 2000 (Denison Mines Limited 2000) did not return any significant results.




NTS 52 P: Keezhik Lake area occurrences

# KEEZHIK LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *2004*: An exploration program consisting of prospecting, geological mapping, diamond drilling and assaying was carried out by Slam Exploration Limited on claims owned by William E. Brereton that cover the KL-31, KL-35 and NBK occurrences. Two new gold occurrences were discovered during this program in diamond-drill holes S04-08 and S04-09. *2004–2005*: Prospecting, geological mapping and assays have been performed by MetalCORP Limited on claims covering the KL-12, KL-18, KL-27, KL-38 and Hansen occurrences.

## General Geology

The Keezhik Lake area is located within the northern portions of the Miminiska–Fort Hope greenstone belt. This portion of the belt was interpreted by Stott and Corfu (1991) to be underlain by the rocks of 3 separate supracrustal rock assemblages. The northernmost assemblage is dominated by mafic metavolcanic flows containing a banded iron formation marker unit. This assemblage is interpreted to be overlain by a southward-facing sequence of massive to pillowed mafic metavolcanic rock that also contains a well-defined iron formation marker unit. A third assemblage consisting of mafic metavolcanic rock, felsic pyroclastic rock and a quartz porphyry intrusion overlies the second unnamed assemblage. The Keezhik Lake gold occurrences are located near the boundary between the second and third assemblages. A wide variety of lithologies have been mapped in this area, including mafic metavolcanic rock, mafic to ultramafic intrusive rocks (gabbro and pyroxenite), banded iron formation, intermediate to felsic pyroclastic rocks with thin interbedded sedimentary layers, and quartz–quartz-feldspar porphyry intrusions (Arnold and MacTavish 2005). Gold occurrences appear to be hosted within all of these lithologies, with the most significant known occurrence (KL-12) being found in a quartz porphyry stock.

## Structural Geology

The Keezhik Lake gold occurrences are located in an area of significant lithologic and structural complexity. The most significant structure mapped in the area is a syncline that was shown by Arnold and MacTavish (2005) to be located immediately to the north of Keezhik Lake. The orientation of stratigraphy and foliation vary throughout the area and appear to generally parallel the northern margin of the quartz-feldspar porphyry intrusion. A number of faults that crosscut and offset stratigraphy have also been interpreted to be present throughout the area. The majority of these faults strike approximately north and northwest.

The gold occurrences of the Keezhik Lake area appear to occur in a number of structural settings, as discussed below. Several significant gold occurrences (KL-12 occurrences, S04-08 and S04-09) have been identified in association with an approximately north-trending silicified shear zone that crosscuts a quartz-feldspar porphyry stock. The KL-38 occurrence is also associated with a structure that crosscuts the competent porphyry intrusion. The Hansen occurrence is associated with a shear, oriented approximately east, that crosscuts mafic metavolcanic rock. The other mineralized zones appear to be generally associated with structures (shears and/or folds) that have developed adjacent to lithological contacts where significant ductility contrasts are likely to have produced favourable conditions for gold deposition in dilatant zones. Examples include contacts between felsic porphyry intrusions and mafic metavolcanic rock and/or iron formation (NBK and S04-12 occurrences), contacts between metavolcanic rock and iron formation (KL-27, KL-31, KL-35), and at a folded contact between felsic metavolcanic rock and gabbro (KL-L18). The orientation of these zones varies. However, they generally appear to be oriented approximately parallel to stratigraphy.

The Keezhik Lake gold occurrences are located in close proximity to the North Caribou Lake–Totogan Lake shear zone. This is a major regional-scale structure that may have provided a source of gold-mineralized fluids. Osmani and Stott (1988) identified this area as having significant gold potential, especially where splays or horse-tail shear zones may have transmitted fault movement into the greenstone belt. Lithological contacts with competent units such as porphyry intrusions and iron formations (i.e., the setting for many of the known occurrences) are considered to be favourable locations for the development of significant gold mineralized structures.

## Deposit Geology

The geology of each of the individual deposits is described below.

## BRASH–KEEZHIK LAKES

| | |
|---|---|
| *Location:* | UTM Zone 16, 402914E 5739573N<br>[occurrence 41 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type iron formation |
| *MDI Reference Number:* | MDI52P16SW00006 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

This occurrence is centred upon a 20 km northwest-trending zone of iron formation located in the vicinity of Brash Lake and Keezhik Lake (Shklanka 1968).

## HANSEN

| | |
|---|---|
| *Location:* | UTM Zone 16, 391440E 5738885N<br>[occurrence 30 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/15 (SE) |
| *MNDM Township Area:* | North Bay Area (Keezhik Lake) |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P15SE00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The Hansen occurrence is located within a sequence of mafic metavolcanic rock. According to Arnold and MacTavish (2005), mineralization occurs within a strongly to intensely silicified, carbonatized, chloritized and biotite-rich zone that contains 5 to 7% finely disseminated pyrrhotite with minor pyrite and chalcopyrite. The mineralized zone is located within a shear zone flanked by massive fine-grained, amphibolitized mafic flows and possibly gabbros. Mineralized veins were described as having an orientation of 285/65 and containing quartz, carbonate, chlorite and up to 7% sulphides (Steep Rock Iron Mines Ltd. 1960). Arnold and MacTavish (2005) further described the veins at this location as being brecciated and flanked by perpendicular 1 to 5 cm thick sugary quartz veinlets and veins.

Channel sample assays of up to 0.66 ounces per ton gold over 0.7 feet were reported from this occurrence (Steep Rock Iron Mines Ltd. 1960); Arnold and MacTavish (2005) reported grab sample assays of up to 16 542 ppb Au.

## KL-12 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 398690E 5736330N [occurrence 35 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number:* | MDI52P16SW00011 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The KL-12 zone is hosted within a 2.5 to 3 km diameter felsic porphyritic stock that was described by Arnold and MacTavish (2005) as a fine- to medium-grained, light green, inequigranular, weakly to moderately foliated, moderate to strongly carbonatized, non-magnetic, pyrite-bearing felsic quartz ± feldspar porphyry with a massive to weakly foliated biotite granite core. The most significant mineralized zones are associated with a silicified shear zone oriented approximately 200/65. This shear contains boudinaged, white to smoky grey quartz veins that are mineralized with pyrite, galena, scheelite and visible gold. The silicified shear is located within a broader zone of sericite and carbonate alteration. Arnold and MacTavish (2005) suggested that the gold mineralization is associated with decreased carbonatization and increased silicification. The blue-grey silicification is commonly associated with accessory galena, molybdenite, scheelite, tourmaline, arsenopyrite and hornblende (Taylor 1988; Winter 1988).

According to Taylor (1988), drilling carried out by Noramco and Severide in the late 1980s delineated 2 economically significant zones within a 450 m strike-length zone of anomalous gold values. These mineralized zones are referred to as subzones KL-12A and KL-12B. Subzone KL-12A was intersected by 4 drill holes, has a strike length of at least 80 m and is open to the east and at depth. The best reported assay in this zone was 47.65 g/t Au over 0.6 m in DDH KL-12. Subzone KL-12B has a strike length of at least 100 m and is open to the west and at depth. The most favourable assay from this zone was 25.78 g/t Au over 1.2 m in DDH KL-71. Significant gold values (up to 2.89 g/t Au over 1.6 m) were also reported in assays from Noramco/Severide drill hole KL-60, located approximately 350 m north-northwest of KL-12. These values were associated with narrow veins of milky white quartz (Taylor 1988).

Arnold and MacTavish (2005) reported the discovery of 5 additional surface gold showings (String 1 to String 5) in an area extending approximately 600 m to the west of KL-12 within the porphyry stock. These showings are associated with white to grey quartz stringers, veinlets and veins. Grab sample assay results of between 1005 and 2948 ppb Au were reported from these new surface occurrences.

## KL-L18 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 401290E 5736860N [occurrence 39 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P16SW00008 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The KL-L18 zone is located at the contact between felsic metavolcanic rock and a gabbro intrusion. Detailed mapping (1:1000 scale) by Arnold and MacTavish (2005, *see* map 5) indicated that the

metavolcanic rock occur as a northwesterly trending unit up to 120 m thick, bounded to the east and west by a gabbro or pyroxenite intrusion. Davis (1988) indicated that the majority of the gold-bearing mineralization at this location was found within the felsic metavolcanic rock. Mineralization occurs in light grey to blue-grey tuffs where brecciation and/or silicification, quartz-carbonate veining, and microfracturing are present. Mineralization consists of arsenopyrite (up to 10%), pyrite, pyrrhotite, chalcopyrite, galena, tourmaline, molybdenite, sphalerite and occasional visible gold.

Arnold and MacTavish (2005) indicated that surface mineralization in the felsic volcanic rock is associated with silica-flooded zones and 130° trending boudinaged quartz veins. These observations are consistent with the interpreted 130° orientation of the mineralized zone reported by Davis (1988). Quartz veining within the gabbro was reported by Arnold and MacTavish (2005) to be restricted to narrow 20 to 70 cm wide shear zones. Davis (1988) interpreted the presence of an east-southeast-plunging anticlinal structure at the eastern contact between the metavolcanic rock and gabbro. The interpreted location of this structure corresponds with the thickest section of metavolcanic rock mapped by Arnold and MacTavish (2005). This thickened zone appears to host the currently identified area of gold mineralization. Foliation in the mineralized area is generally oriented at approximately 290/50 in both lithologies (possibly axial-planar to interpreted fold?). The mineralized zone was interpreted by Davis (1988) to be bounded to the west by a north-striking fault, the location of which was mapped by Arnold and MacTavish (2005, *see* map 5). This interpreted fault corresponds with the western gabbro–metavolcanic contact.

Significant gold assays (i.e., >0.5 g/t Au) were reported by Davis (1988) from samples collected from 9 diamond-drill holes that were advanced through this zone in 1987 over an approximate strike length of 150 to 200 m. The most significant reported gold assay was 18.93 ppm Au over 1.5 m in DDH KL-10.

## KL-27 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 401290E 5738140N<br>[occurrence 40 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P16SW00009 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The geology of the KL-27 zone was summarized by Arnold and MacTavish (2005) as consisting of a complex package of strongly folded, sheared and faulted rocks composed of moderately to strongly chloritic magnetite-bearing mafic metavolcanic rock with 1% disseminated pyrite; fractured and sericitized oxide-facies iron formation with up to 6% pyrite and 1% arsenopyrite; graphite-chert and massive sulphide bands crosscut by quartz veins; felsic pyroclastic rock; and intermediate pyroclastic rock containing 3 to 8% pyrrhotite in blebs and stringers.

Gold mineralization was reported by Davis (1988) to be associated with fracturing and quartz veining and was interpreted to occur along an easterly plunging trend that deepens toward the east and is oriented at 115°. This is approximately parallel to an approximately east-trending transpressional zone that was interpreted by Arnold and MacTavish (2005) to exhibit a dextral sense of shear. Anomalous gold values may be found in any of the lithological units, and is associated with quartz veining, fractured iron formation, fold hinges and arsenopyrite mineralization. No pervasive alteration is associated with the mineralization zone.

Gold assays above 0.5 g/t Au were reported by Davis (1988) in intersections from 7 drill holes, with the best value being reported as 13.3 g/t Au over 1.4 m. The gold mineralized drill holes intersected mineralization along a strike length of approximately 200 m.

## KL-31 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 397305E 5738750N<br>[occurrence 34 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P16SW00010 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

Winter (1988) indicated that the KL-31 occurrence is located within an altered iron formation that is hosted within a mafic metavolcanic sequence. The occurrence is in close proximity to the contact with a quartz porphyry intrusion. Arnold and MacTavish (2005, *see* map 1) indicated that stratigraphy in this area is approximately east striking. No significant structures appear to have been mapped in this area.

This occurrence is based on a gold assay of 4.43 g/t Au over 1.5 m from a single drill hole (KL-31), as reported by Winter (1988).

## KL-35 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 394855E 5735670N<br>[occurrence 32 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/15 (SE) |
| *MNDM Township Area:* | North Bay Area (Keezhik Lake) |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000152 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The KL-35 zone is hosted within a sequence of mafic metavolcanic rock containing thinly banded iron formation (Winter 1988). B.J. McKay (2004a) reported that the gold mineralization at this location is associated with bedded chert ± pyrite, ± quartz-tourmaline-carbonate veining and sheared mafic volcanic rock with carbonate-quartz veining. The showing is located immediately south of a porphyry intrusion. Arnold and MacTavish (2005, *see* map 1) indicated the stratigraphy strikes approximately northeast. The occurrence is also located less than 1 km from interpreted north-northeast and northwest-striking faults.

The most favourable gold assay from this zone reported by Winter (1988) was 5.01 g/t over 0.8 m from DDH KL-35.

## KL-38 ZONE

| | |
|---|---|
| *Location:* | UTM Zone 16, 400300E 5736705N [occurrence 38 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000153 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The KL-38 occurrence is hosted within the same quartz-feldspar porphyry intrusion that hosts the KL-12 zone. Winter (1988) described the KL-38 zone as a showing that exhibits anomalous gold values associated with quartz veining in quartz-feldspar porphyry. The quartz veins are reported to strike north and have near-vertical dips. A northerly dipping east-striking shear zone at this location was also reported to host gold mineralization.

The most favourable reported assay obtained from DDH KL-38 was 1.34 g/t Au over 1.5 m. A 15 m wide zone with >500 ppb Au was also reported from this drill hole.

## NBK

| | |
|---|---|
| *Location:* | UTM Zone 16, 394125E 5737570N [occurrence 31 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/15 (SE) |
| *MNDM Township Area:* | North Bay Area (Keezhik Lake) |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P15SE00005 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

The NBK occurrence is located near the contact between mafic volcanic rock and a quartz porphyry (Arnold and MacTavish 2005, *see* map 1). Davis (1988) indicated that the mafic metavolcanic rocks include massive and pillowed flows, and that they are capped by 5 cm to 1 m of lean, cherty banded iron formation. Several smaller bodies of porphyry are also reported to intrude the metavolcanic rock. A northwest-trending fault was mapped approximately 350 m northeast of this occurrence. Winter (1988) indicated that mineralization occurs at a folded contact between mafic flows and foliated quartz porphyry sills. The gold is associated with east- and northeast-trending shears in the mafic flows, north-trending quartz-ankerite veins cutting both rock types, medium- to coarse-grained pyrite associated with minor folds and banded iron formation, and dilatant zones near folded lithological contacts.

The best assay reported by Winter (1988) was 3.33 g/t Au in a surface grab sample of sulphide iron formation. The results of recent drilling of this occurrence (DDH S04-10) by Slam Exploration are reported to include a gold assay of 3.51 ppm Au over 0.7 m in rock described as fractured iron formation with smoky translucent quartz and semi-massive to massive millimetre-scale pyrite layers (B.J. McKay 2004a).

## S04-08 AND S04-09

| | |
|---|---|
| *Locations:* | S04-08: UTM Zone 16, 398860E 5735015N<br>S04-09: UTM Zone 16, 399050E 5735560N<br>[occurrences 36 and 37, respectively, on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/16 (SW) |
| *MNDM Township Area:* | Keezhik Lake Area |
| *Commodities:* | Au |
| *Status:* | 2 Occurrences |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Numbers:* | S04-08: MDI000000000154<br>S04-09: MDI000000000155 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

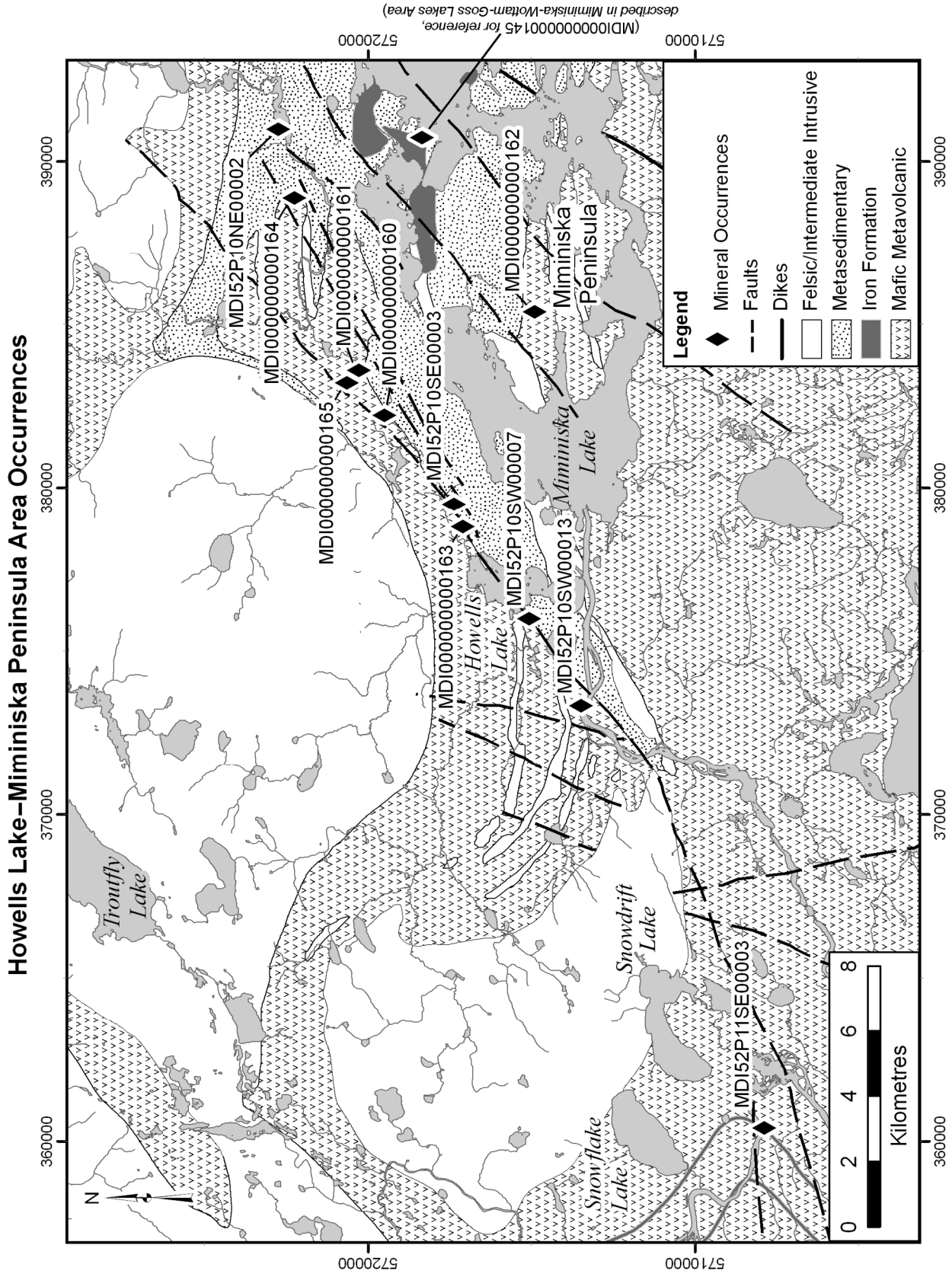
B.J. McKay (2004a) reported the discovery of 2 new gold occurrences in the Keezhik Lake quartz-feldspar porphyry stock that also hosts the KL-12 and KL-38 gold occurrences. These drill holes were undertaken to test an inferred northerly trending regional shear that is believed to host the KL-12 occurrence. Drill hole S-04-09 is located approximately 800 m south-southeast of KL-12; S04-08 is located approximately 550 m further to the south. The most significant mineralization in drill hole S04-08 was obtained from a chloritic shear in silicified quartz porphyry, whereas the best assays from S04-09 were reported in sericitic intervals. Both holes intersected variably altered porphyry over their entire length.

The most favourable assays included 13.714 ppm Au over 0.5 m in DDH S04-18 and 4.322 ppm Au over 1.0 m in DDH S04-09.

## S04-12

| | |
|---|---|
| *Location:* | UTM Zone 16, 395680E 5737022N<br>[occurrence 33 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/15 (SE) |
| *MNDM Township Area:* | North Bay Area (Keezhik Lake) |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000156 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Unnamed assemblage |

Anomalous gold mineralization was reported by B.J. McKay (2004a) in a diamond-drill hole (S04-12) that was undertaken to evaluate a soil geochemical anomaly. The drilling encountered a sequence consisting of mafic metavolcanic rock, iron formation and quartz porphyry. The anomalous gold value (1.28 ppm Au over 0.9 m) was obtained at the contact between iron formation and quartz porphyry. The mineralized zone is located within the iron formation and contains transparent and translucent quartz veins and sulphide knots containing pyrite and chalcopyrite. Bedding is reported to be distorted and crenulated, with numerous perpendicular quartz-filled fractures.




NTS 52 P: Howells Lake–Miminiska Peninsula area occurrences

# HOWELLS LAKE–MIMINISKA PENINSULA AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *2003–2006*: Candor Ventures carried out an exploration program consisting of geochemical and geophysical surveys, diamond drilling and assaying on claims in the vicinity of the M-6 occurrence. *2004*: An exploration program consisting of diamond drilling and assaying was carried out by Slam Resources on claims covering the Ymir, Baroque–Felmont and S04-01 occurrences.

## General Geology

The geology of the Miminiska Peninsula area was mapped by Wallace (1978b, 1981b), who identified 3 major supracrustal rock sequences. These include 2 mafic metavolcanic-dominated sequences and 1 metasedimentary rock-dominated sequence. The oldest of these units is interpreted to be a thick, predominantly mafic, metavolcanic sequence that is found in the southern portion of the Miminiska Peninsula and the area immediately south of Miminiska Lake. These mafic metavolcanic rocks have, in turn, been interpreted to be overlain by a metasedimentary rock sequence that is dominated by wacke and mudstone, but also contains significant thicknesses of banded iron formation. The metasedimentary sequence is overlain to the north by a second mafic metavolcanic rock-dominated sequence. A significant unit of felsic to intermediate pyroclastic rocks was also mapped in the western portion of this area (southeast of Howells Lake). This unit is located immediately south of the metasedimentary sequence west of Miminiska Lake, but is enclosed within the metasedimentary rocks further to the east. This area is bounded to the northwest by felsic intrusive rocks of the Troutfly Lake batholith.

## Structural Geology

Stratigraphic units in the vicinity of Howells Lake generally strike approximately northeast, with steep, near-vertical dip. Further to the northeast, toward Keezhik Creek, stratigraphy strikes in a more easterly orientation. Wallace (1981b) indicated that foliation is generally oriented subparallel to the primary sedimentary bedding and igneous flow contact features. Foliation and shearing were noted by Clark (2005) to be most prominent in tuffaceous mafic metavolcanic layers. Wallace (1978b, 1981b) mapped a number of northeast-trending faults and lineaments in this area. More recent maps (e.g., B.J. McKay 2004b) illustrate a northeast-striking fault that parallels the metavolcanic–metasedimentary rock contact in the vicinity of Howells Lake. This structure appears to be related to many of the gold and antimony-gold occurrences in this area.

## Deposit Geology

The geology of each of the individual deposits is described below.

## 80-MW-13 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 388900E 5722250N<br>[occurrence 50 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (NE) |
| *MNDM Township Area:* | Nesting Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000164 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Clark (2005) reported that New Jersey Zinc encountered gold mineralization during drilling of diamond-drill hole 80-MW-13. This drill hole was advanced to the east of the hinge of a fold interpreted from geophysical survey data. The rocks encountered during drilling were described as feldspathic arenite with minor wacke. Gold was reportedly encountered in a 1.3 foot wide zone of quartz-carbonate veining (assay value of 0.047 ounce per ton gold). This vein material was mineralized with up to 3% pyrrhotite and pyrite, with trace chalcopyrite and arsenopyrite. The mineralization was encountered near the contact with a quartz-feldspar porphyry intrusion.

## BAROQUE–FELMONT

| | |
|---|---|
| *Location:* | UTM Zone 16, 382225E 5719500N<br>[occurrence 47 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000160 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Baroque–Felmont occurrence is located within rocks mapped by Wallace (1981b) as metavolcanic rock and is in close proximity to a fault identified by B.J. McKay (2004b, *see* geology map). Gold mineralization was reported to be present at this location in assay results from diamond-drill hole ML-86-5 (Mason and White 1995). The most notable results included 0.31 ounce per ton gold over 3.4 feet and 0.169 ounce per ton gold over 12 feet. Clark (2005) also indicated that Felmont Oil drill hole M84-11 intersected 0.233 ounce per ton gold over 4.0 feet at this location.

## BAROQUE GRID 12B

| | |
|---|---|
| *Location:* | UTM Zone 16, 383600E 5720275N<br>[occurrence 49 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000161 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Clark (2005) reported that Baroque encountered gold mineralization in a number of diamond-drill holes at this location. The occurrence is hosted within sheared and silicified mafic volcanic rock and banded iron formation. Mineralization is described as consisting of varying amounts of disseminated pyrrhotite (up to 4%), pyrite and arsenopyrite. Chlorite and biotite alteration were also reported. The occurrence is shown to be located immediately southeast of a northeast-striking fault (B.J. McKay 2004b, *see* geology map).

Notable assays from this prospect reported by Clark (2005) include 5.64 g/t Au over 1.67 m in drill-hole 87-10; 0.77 g/t Au over 0.94 m in DDH 88-01; 0.23 g/t Au over 5.2 m in DDH 88-02; and 0.68 g/t Au over 1.7 m in DDH 88-03.

## CURRIE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 373350E 5713475N<br>[occurrence 43 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SW) |
| *MNDM Township Area:* | Snowdrift Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P10SW00013 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Mason and White (1995) reported that the Currie occurrence is hosted in mafic metavolcanic rock, with mineralization occurring within 3 quartz veins that strike between 021 and 026. The veins reportedly contained visible gold. Porphyry float containing chalcopyrite and quartz float containing gold and chalcopyrite were also reported on the Currie property. This occurrence is located in close proximity to 2 fault structures (*see* Mason and White 1995, back-pocket map).

## HOWELLS LAKE PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 376000E 5715075N [occurrence 44 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SW) |
| *MNDM Township Area:* | Snowdrift Lake Area |
| *Commodities:* | Sb, Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number:* | MDI52P10SW00007 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Howells Lake prospect is located in close proximity to a contact between metasedimentary and metavolcanic rock units that was interpreted by B.J. McKay (2004b, *see* geology map) as a [northeast-striking] fault. The possible occurrence of economic mineralization in this area was first reported by Prest (1939a, 1939b), who noted the presence of pyrite-mineralized porphyry intrusions and massive stibnite float on a small island in the northeastern portion of Howell's Lake.

An unpublished property visit report, prepared by John Scott in 1977 (available in the Thunder Bay North Resident Geologist's office mineral deposit files), indicated that economic mineralization at this location consists primarily of stibnite and gold, with minor galena, sphalerite, silver and tetrahedrite. Mineralization occurs primarily in quartz veins, with some also present in the host rocks. The quartz veins are described as being approximately perpendicular to an unconformity between the volcanic and sedimentary rocks. The presence of an unconformity at this location had been interpreted by New Jersey Zinc (holder of the claim group at the time). This contact may be equivalent to the fault interpreted by B.J. McKay (2004b).

Patterson et al. (1987) reported the presence of an extensive zone of carbonate alteration associated with a nearby quartz porphyry intrusion, and shearing and quartz veining at the contact between mafic metavolcanic rock and graphitic schist. The quartz veining is indicated to be associated with green mica, pyrite and stibnite.

Patterson et al. (1987) also reported that Homestake Mineral Development had defined 2 mineralization zones with the following mineral resource estimates: western zone with 83 000 tons grading 1.37% Sb and 0.07 ounce per ton gold; and the eastern zone with 660 000 tons grading 3.1% Sb and with erratic Au grades.

## M-6

| | |
|---|---|
| *Location:* | UTM Zone 16, 385400E 5714900N [occurrence 52 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000162 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Waldie (2004) reported that BP Selco encountered gold mineralization at this location from diamond-drill hole M-6 during a 1984 exploration program. The mineralized interval was described as locally garnetiferous chlorite-quartz schist. The host rock was reported to be metasedimentary rock consisting of interbedded phyllite and quartz wacke. Mineralization included up to 30% pyrrhotite with disseminated pyrite (1 to 2%) and arsenopyrite (1 to 2%). Trace chalcopyrite and visible gold were also reported. The most significant reported assay was 33.5 g/t Au over 0.26 m.

## MC79-10

| | |
|---|---|
| *Location:* | UTM Zone 16, 378815E 5717095N<br>[occurrence 45 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000163 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This occurrence is based on a reported assay of 1.90 g/t Au over 1.43 m from New Jersey Zinc diamond-drill hole MC79-10 (Clark 2005).

## S04-01 OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 383224E 5720653N<br>[occurrence 48 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000165 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This occurrence is based on a reported assay of 1.5 g/t Au over 2 m from Slam Exploration diamond-drill hole S04-01 (B.J. McKay 2004b). This result was obtained from a horizon of quartz-magnetite iron formation hosted within mafic metavolcanic rock. The diamond-drill hole log for the mineralized horizon reports the presence of 2 narrow pyrrhotite-mineralized quartz veins (approximately 5 cm wide), and a 3 cm wide vuggy pyrrhotite vein. This occurrence is located approximately 750 m northwest of a northeast-striking fault mapped by B.J. McKay (2004b).

## SNOWDRIFT LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 360403E 5707875N<br>[occurrence 42 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/11 (SE) |
| *MNDM Township Area:* | Snowflake Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI52P11SE00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Shklanka (1968) based this occurrence on the presence of iron formation within mafic metavolcanic rock adjacent to the Albany River observed by Duffell (1963; *see also* Duffel, MacLaren and Holman 1963; MacLaren 1963).

## THOMPSON OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 379500E 5717375N [occurrence 46 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P10SE00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Thompson occurrence is located within mafic metavolcanic rock, immediately north of the contact with metasedimentary rocks. This contact was interpreted by B.J. McKay (2004b, *see* geology map) as a [northeast-striking] fault. Mason and White (1995) described the gold mineralization as being associated with fine-grained disseminated pyrite in foliation-parallel white quartz and/or carbonate veins. The strike of the steeply dipping foliation in this area was measured by Wallace (1978b) as ranging from 045 to 050.

The most favourable assay results from this location, obtained by Central Patricia Mines Limited in 1951, include 0.58 ounce per ton gold over 1 foot (DDH H1) and 0.16 ounce per ton gold over 5 feet (DDH H5C).

## YMIR (SZETU–BAYNE) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 391000E 5722750N [occurrence 51 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (NE) |
| *MNDM Township Area:* | Nesting Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P10NE00002 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

This gold occurrence was reported by Wallace (1981b) to be hosted within metasedimentary rocks consisting of coarse-grained lithic arenite and/or wacke. Gold was reported to occur in sheared and silicified metasedimentary rocks containing quartz and carbonate stringers. Mineralization included disseminated pyrite, pyrrhotite, arsenopyrite and visible gold. The mineralized zone occurs in an approximately 3 m wide shear zone that is oriented approximately 050. Mann (1984) reported that rocks mapped in the vicinity of the mineralized zone are dominated by rusty-weathering pyritized argillites.

The most favourable gold assays reported from this showing are documented by Mason and White (1995, p.178) and include, from Anaconda Canada Exploration Ltd., 18.1 g/t Au in a 3.8 m chip sample, and 4.32 g/t Au over 2.0 m in DDH #2.

# MIMINISKA LAKE–WOTTAM LAKE–GOSS LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *2002–2006*: Landore Resources carried out an exploration program on properties that cover the Wottam Lake area occurrences and prospects. To date, exploration efforts have focussed mainly on the Miminiska prospect, with work including geological and geophysical compilation, geological mapping, prospecting, diamond drilling and assays.

## General Geology

The rocks of the Wottam Lake area are dominated by a thick sequence of metasedimentary rocks described by Wallace (1981b) as predominantly monotonously intercalated wacke and mudstone. This sedimentary sequence also contains numerous horizons of oxide-, carbonate- and/or silicate-facies iron formation. Some of these iron formation units have considerable thickness (i.e., up to 150 m), with the most notable iron formation being located at the eastern end of Miminiska Lake. This iron formation thins considerably toward the northeast, and several thinner (typically <10 m) iron formation horizons have been mapped to the south (Needham 2005). The metasedimentary sequence conformably overlies a thick, predominantly mafic metavolcanic sequence that is located to the south. A second, predominantly mafic metavolcanic rock sequence, interpreted by Wallace (1981b) to overlie the metasedimentary rocks, was also mapped to the north. A number of large felsic intrusions occur to the north (Cluff Lake stock, South Bay stock and Troutfly Lake batholith) and south (Kawitos Lake batholith) of these supracrustal sequences.

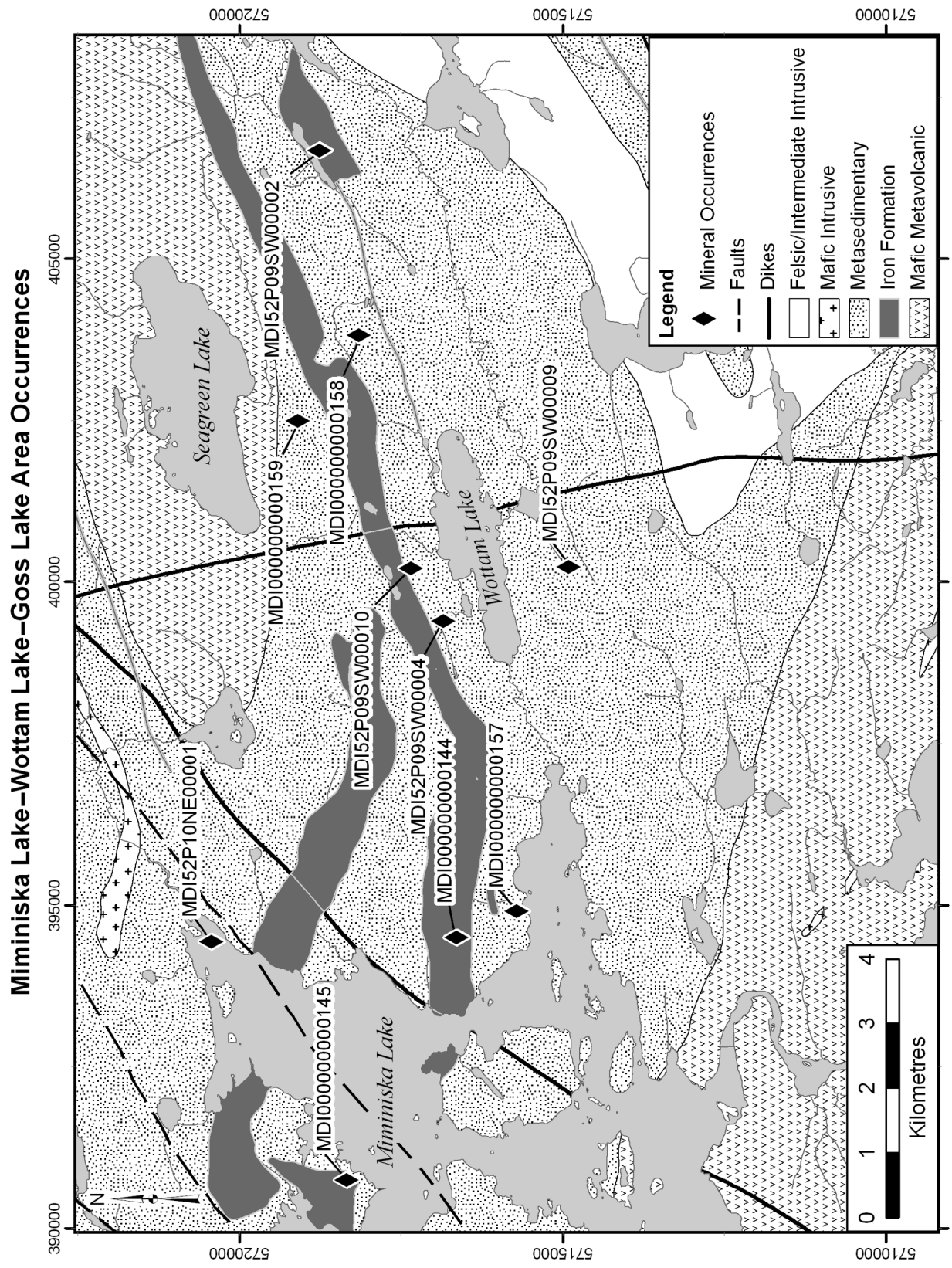
## Structural Geology

Mapping by Wallace (1978c, 1981b) indicated that sedimentary bedding in the Wottam Lake area typically strikes in an east-northeasterly direction, with moderate to steep northward dip. Further west, in the vicinity of Miminiska Lake, bedding strikes approximately east with near-vertical dips. A number of approximately easterly trending isoclinal folds are interpreted by Wallace (1981b) to occur within the metasedimentary sequence. These include a synclinal structure with an axial trace that passes through Wottam Lake and Goss Lake, and a second syncline with an axial trace that extends from an area north of Miminiska Island toward Seagreen Lake.

Needham (2005) indicated that strong foliation is present at numerous locations throughout the Wottam Lake area. The foliation is typically parallel to sedimentary bedding, with dips ranging from 50 to 80° to the north. However, it was locally observed to be 10 to 20° oblique to bedding. Notable locations with strong foliations include the northern sedimentary–volcanic contact and an area approximately 200 to 300 m north of Wottam Lake associated with the WSaspy3 (International) occurrence. Outcrop-scale isoclinal folds and localized arsenopyrite mineralization are commonly observed in the strongly foliated sedimentary rocks.

Needham (2005) indicated that gold in this area is typically associated with axial planar shear zones mineralized with pyrrhotite, pyrite and arsenopyrite. The host rock is typically strongly foliated or sheared magnetite-bearing silicate to oxide iron formation. It is also notable that the Miminiska Lake deposit is located in close proximity to a number of major northeast-striking faults paralleling Ferguson Creek that were mapped by Wallace (1978c, 1981b). The faults may have provided a significant pathway for gold-mineralized fluid migration.

The metamorphic grade in the central portion of the Wottam Lake area is low, with grades increasing toward the north, south and east (Wallace 1981b).




NTS 52 P: Miminiska Lake–Wottam Lake–Goss Lake area occurrences

## Deposit Geology

The geology of each of the individual deposits is described below.

## GOSS LAKE PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 406680E 5718770N [occurrence 62 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SW00002 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The Goss Lake prospect is hosted within an east-northeast-striking metasedimentary rock sequence. Rocks in the immediate vicinity of the deposit have been mapped as mudstone, phyllite, slate, quartz-sericite schist, lithic and arkosic wacke, garnetiferous and non-garnetiferous quartz-feldspar-biotite schist, amphibole-garnet-biotite iron formation, grünerite-hornblende iron formation and banded magnetite-quartz-chert iron formation (Mason and White 1995).

Mineralization consists of pyrrhotite, arsenopyrite and visible gold, and is confined to the iron formation and quartz-filled tension fractures within it. Pyrrhotite occurs in disseminated foliation-parallel layers up to 2 cm wide, whereas arsenopyrite occurs as megacrysts of up to 1 cm. The sulphide mineralization is interpreted to be related to replacement of iron oxides caused by the introduction of sulphide and gold-bearing hydrothermal fluids. Quartz veins are also reported by Mason and White (1995) to be associated with folded iron formation. The quartz veins are typically oriented parallel to axial planar cleavage and are best developed in proximity to the fold axes.

Three gold mineralized zones were identified by Neal and Miller (1987), with gold concentrations decreasing with depth. These zones were indicated by Needham (2005) to be variably silicified, garnetiferous, with amphibole and chlorite–sericite alteration. It was also noted that geophysical survey data appear to indicate that the gold-mineralized horizons are associated with a low magnetic response.

Needham (2005) reported that, in 1985, Tandem Resources calculated a mineral resource totalling 278 220 tonnes with an average grade of 7.41 g/t Au.

## INTERNATIONAL (WSaspy3) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 399400E 5716850N [occurrence 58 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

Mapping carried out by Needham (2003) indicated that the WSaspy3 (International) occurrence is hosted in a metasedimentary rock sequence that includes argillite, greywacke and iron formation. The showing is located within an approximately 150 m wide east-northeast-striking shear/deformation zone, with gold mineralization occurring within the iron formation unit, which is indicated to be approximately 4 m thick.

The mineralized iron formation displays significant arsenopyrite mineralization associated with discontinuous quartz veinlets and/or seams of silicification. The quartz veinlets are reported to commonly crosscut foliation at oblique angles. Anomalous gold values are associated with the most intensely altered and sulphide mineralized (arsenopyrite ± pyrrhotite) horizons. Quartz veins observed within the sedimentary units in the vicinity of the showing were reported by Needham (2005) to be non-mineralized.

The most favourable reported assay obtained from this occurrence was 0.7 g/t Au from a surface grab sample obtained from a semi-massive seam of arsenopyrite mineralization hosted in the iron formation (Needham 2003).

## MIMINISKA LAKE GOLD PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 394910E 5715720N [occurrence 56 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000157 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

Needham and Sale (2004) indicated that a major unit of banded iron formation with no known gold occurrences is present on the northern portion of the Miminiska property. This iron formation was shown by Wallace (1978c) in the west-central portion of the map. South of this major iron formation, a number of thinner iron formation horizons occur interbedded with clastic metasedimentary rocks (argillite and greywacke). These thinner iron formation horizons have been isoclinally folded and host zones of anomalous gold mineralization. The gold mineralization was interpreted by Needham and Sale (2004) to be associated with multiple, strongly foliated shear or fault zones that are subparallel to the axial plane of the isoclinal folds. These shear zones are commonly strongly quartz-chlorite-carbonate veined, and host gold mineralization where they crosscut the iron formation. The gold-mineralized zones are also commonly arsenic enriched (arsenopyrite), with pyrrhotite being the dominant sulphide mineral (minor

pyrite is also noted). The gold-mineralization style has been interpreted to be a combination of stratabound replacement (i.e., pyrrhotite ± arsenopyrite replacing magnetite) and quartz-chlorite-carbonate veinlet-hosted.

Barclay (2004, Appendix II *in* Needham and Sale 2004) noted that the average measured orientations of sedimentary bedding, foliation, shearing and gold-mineralized quartz-carbonate veins at this location are all subparallel, with average orientations of 097/85, 103/87, 107/82 and 100/85, respectively. Northeast-striking (most likely dextral) cross faults interpreted to postdate the east-striking mineralized horizons have also been mapped. Needham and Sale (2004) indicated that these northeast-striking faults occur in areas of magnetite destruction.

Numerous significant gold assays have been reported from the approximately 86 diamond-drill holes that have been advanced on the property since 1945. The pre-1999 results were used by Shear Resources to obtain preliminary (not compliant with NI 43-101) resource estimates from 10 mineralized zones. Total estimated resources for 1, 2 and 3 g/t Au cutoff grades were as follows: 880 773 tonnes averaging 3.16 g/t Au, 618 747 tonnes averaging 3.89 g/t Au and 346 900 tonnes averaging 5.28 g/t Au (Needham and Sale 2004).

## MIMINISKA LAKE IRON OCCURRENCES (WEST AND EAST)

***Exploration History***: *1965*: Ground magnetometer survey by Algoma Steel. *1966*: Magnetometer survey and 4 diamond-drill holes by Pickands Mather for Mattagami Mining Company.

| | |
|---|---|
| *Locations:* | West Occurrence: UTM Zone 16, 390750E 5718350N<br>East Occurrence: UTM Zone 16, 394500E 5716650N<br>[occurrences 54 and 55, respectively, on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (SE) |
| *MNDM Township Area:* | Miminiska Lake Area |
| *Commodities:* | Fe |
| *Status:* | 2 Occurrences |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Numbers:* | West Occurrence: MDI000000000145<br>East Occurrence: MDI000000000144 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The Miminiska Lake Iron occurrences are located within a banded iron formation that is hosted in a thick metasedimentary rock sequence consisting predominantly of intercalated mudstone and wacke (Wallace 1981b). Wallace (1981b) indicated that the iron formation in the area of these occurrences is folded on a highly variable scale with steeply plunging northwest- and southeast-trending axes.

Diamond drilling on the Miminiska Lake Iron West occurrence was reported to have encountered 155 m of iron formation with intercalated clastic metasedimentary units (Wallace 1981b). Reported assays ranged from 18.2 to 32.6% Fe.

Wallace (1981b) reported that 165 m of mixed chemical and clastic metasedimentary rocks were encountered during diamond drilling of the Miminiska Lake Iron East occurrence. Reported assays ranged from 13.0 to 30.0% Fe.

## NISKA OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 394438E 5720439N [occurrence 53 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/10 (NE) |
| *MNDM Township Area:* | Nesting Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold in float |
| MDI Reference Number: | MDI52P10NE00001 |
| Subprovince/Belt/Assemblage: | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The Niska occurrence is based on the finding of 2 gold-bearing iron formation boulders in an area of deep overburden cover (Mason and White 1995). A heavy mineral sample result of 2600 ppb was reported from this location in 1984. The source of the anomalous gold values has not been identified.

## NORTH WOTTAM LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 400210E 5717350N [occurrence 59 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SW00010 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The North Wottam Lake occurrence is hosted within the same metasedimentary rock sequence that hosts the Goss Lake prospect (MDI52P09SW00002). The reported gold occurrence is based on the results of diamond drilling carried out at this location by International Mining Corporation in 1945 (Baker 1946).

An assay result of 7.2 g/t Au (0.21 ounce per ton gold) was obtained from a 13 cm (5 inch) wide pyrite-mineralized quartz vein intersected by DDH 2.

## SL-87-04

| | |
|---|---|
| *Location:* | UTM Zone 16, 402500E 5719100N [occurrence 60 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000159 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The SL-87-04 occurrence is located in close proximity to the contact between the northern mafic metavolcanic sequence and the Wottam Lake area metasedimentary rock sequence mapped by Wallace (1978c, 1981b). Stratigraphy in this area generally strikes east-northeast. This occurrence is based on Noramco Explorations drilling in 1987 (DDH SL-87-4) that reportedly encountered a zone of strong silicification, fracturing and carbonate alteration within a unit logged as mafic metavolcanic tuff. A gold assay of 28.11 g/t Au was reported over 1.5 m (AFRI# 52P09SW0001). The occurrence is located approximately 500 m east of a northeasterly trending structural lineament mapped by Wallace (1978c).

## WOTTAM LAKE (WS41) OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 400230E 5714910N [occurrence 57 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SW00009 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

Wallace (1981b) described the Wottam Lake (WS41) occurrence as being hosted in a unit of amphibole-biotite-garnet iron formation and banded chert. Detailed mapping in the vicinity of the showing by Needham (2003) indicated that the mineralized iron formation unit is hosted in a sedimentary sequence consisting of argillite and greywacke.

Disseminated arsenopyrite mineralization (1 to 5%) was reported by Wallace (1981b) to occur over a width of approximately 5 m. The centre of the mineralized zone contains massive pods and blebs of arsenopyrite, pyrite and/or pyrrhotite within the iron formation and quartz lenses. These quartz lenses were reported by Wallace (1981b) to parallel the outcrop structural trend and are up to 0.5 m wide. Mineralized quartz veinlets and silicified seams described as “quartz ladder veinlets or flats” were also observed crosscutting foliation by Needham (2003). Needham (2003) also indicated that the strongest sulphide mineralization occurs where the iron formation has been cross folded. Grünerite alteration and foliation-parallel chlorite seams were also noted in the most strongly mineralized areas.

Needham (2005) indicated that sedimentary bedding in the area surrounding the showing strikes between 250 and 270 with moderate northerly dips (50 to 65). Foliation is strongly developed at the showing and is oriented at 250/60 (Needham 2003). In the area surrounding the showing, foliation is sometimes oblique to bedding and ranges in orientation from 235 to 250, with moderate northerly dips. Occasional non-mineralized quartz stringers paralleling foliation were commonly observed within the sediments.

The most favourable gold assay reported from this showing is 3.37 g/t Au from a grab sample of intensely silicified iron formation containing significant arsenopyrite mineralization (Needham 2003).

## WSaspy1

| | |
|---|---|
| *Location:* | UTM Zone 16, 403820E 5718160N [occurrence 61 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SW) |
| *MNDM Township Area:* | Frond Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000158 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / Miminiska Lake metasedimentary rocks |

The WSaspy1 occurrence is located within a sulphide-bearing iron formation unit that was mapped and sampled by Needham (2003). The majority of outcrop exposure in the vicinity of this showing is a mixture of silicate, oxide-facies and sulphide-facies iron formation. This iron formation also contains interbedded slate and greywacke. An isoclinal fold has been mapped in this area. Thin (<10 cm wide) shears were noted parallel to the axial plane (northeast striking) of this fold. The iron formation shows localized evidence of replacement of magnetite by pyrrhotite. The iron formation contains abundant quartz veining, with some of these veins reported to be folded. The quartz is also reported to have a recrystallized appearance. Semi-massive pyrrhotite ± arsenopyrite mineralization was observed in the southernmost of 2 sulphide-facies iron formation horizons.

The best assay obtained from this material was 0.51 g/t Au.

# LILYPAD LAKES AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

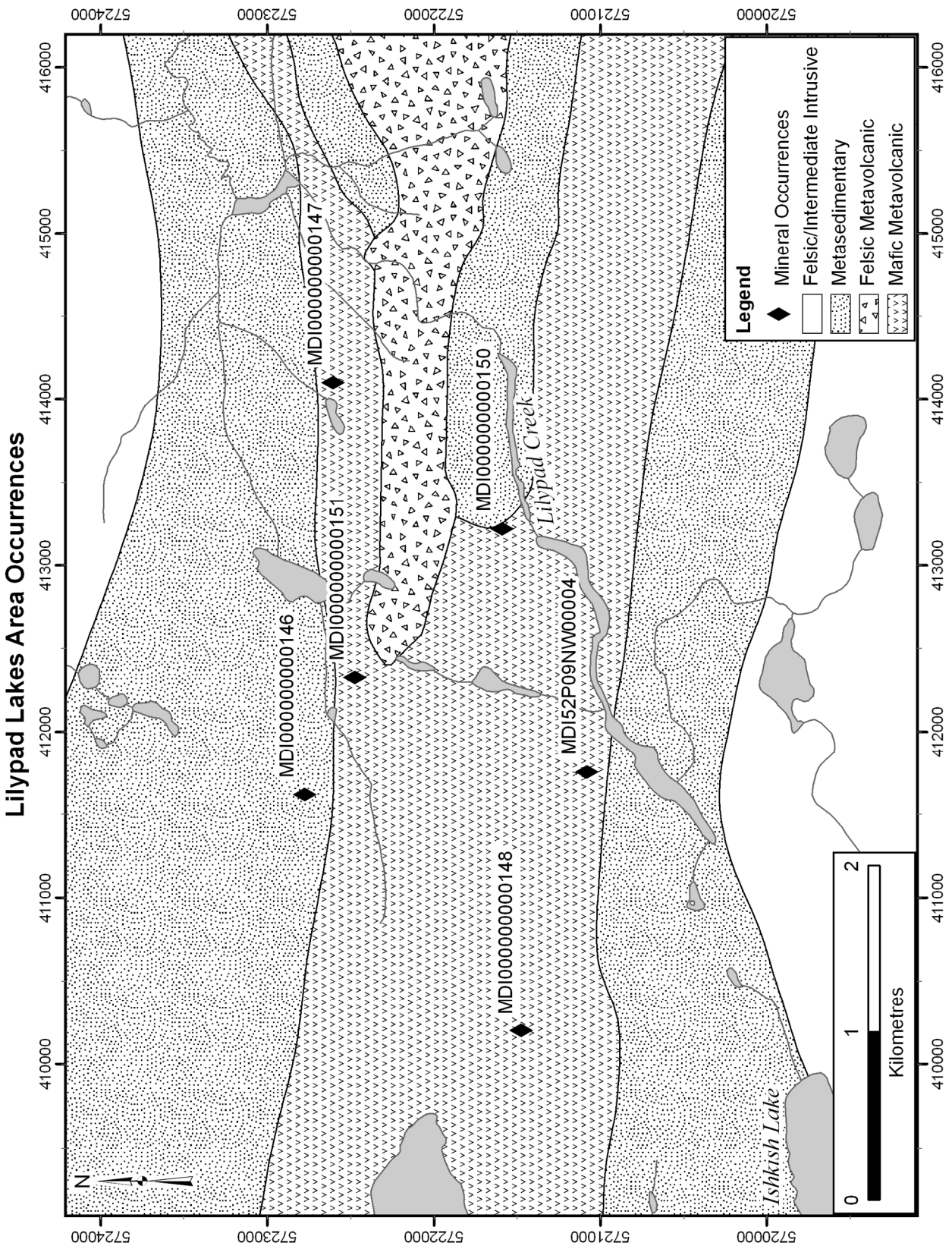
***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *1999–2001*: Avalon Ventures carried out an exploration program consisting of geophysical surveys (gravity and magnetic), prospecting, geological mapping, a bedrock lithogeochemical survey, diamond drilling and assaying.

## General Geology

The Lilypad Lakes Ta-Cs-Li-Rb occurrences are located within a 10 $km^2$ field of rare metal pegmatite dikes located within a sequence of east-trending mafic to felsic metavolcanic rocks (Taylor et al. 2005). Mapping carried out by Wallace (1977, 1978a) and Hall (2004) indicated that the metavolcanic sequence in the vicinity of the occurrences includes massive and pillowed mafic to intermediate flows that are intercalated with thin layers of tuffaceous material and oxide-bearing, cherty iron formation, and felsic tuff units of rhyodacitic to rhyolitic composition. The metavolcanic rock is bounded to the north and south by metasedimentary rock, which were described by Hall (2004) as interbedded sandstones and siltstones to shales. The sedimentary rocks are locally gneissic, with metamorphic grades generally increasing to the south toward the Kawitos Lake batholith. The Kawitos Lake batholith is a complex of orthogneiss-peraluminous, S-type granite–*lit-par-lit* paragneiss (Breaks and Tindle 2004) that is believed to be genetically related to the rare element pegmatites. This batholith is similar to other fertile, S-type peraluminous granites located along the boundary between the Uchi domain and English River basins. A second granitic intrusion known as the Cluff Lake stock is located immediately to the north of the mineralized pegmatite field. This intrusion was described by Wallace (1978a) as a massive biotite and hornblende-biotite granodiorite and quartz monzonite.

## Structural Geology

Taylor et al. (2005) recognized evidence of 2 principal regional deformation events in the vicinity of these deposits. Both events have affected the pegmatite dikes and host rocks. The earliest deformation event is characterized by a strong to intense penetrative to locally spaced cleavage in the metasedimentary and metavolcanic rocks. This fabric approximately parallels stratigraphy in the supracrustal rocks. This fabric is also weakly developed in the more competent pegmatite dikes, and has been noted in the northern portions of the Kawitos Lake batholith. This fabric is likely to have been related to a regional north-south compressional event, and is axial planar to isoclinal folds. A second later strain event is represented by crenulation folds that overprint the earlier fabric. With the exception of the Spodumene dike, most pegmatites show little evidence of having been impacted by the second deformation event. These deposits are likely to be genetically related to the Kawitos Lake batholith, which was identified by Breaks and Tindle (2004) as a potential fertile S-type granite pluton similar to others that are located near the Uchi domain–English River basins boundary.




NTS 52 P: Lilypad Lakes area occurrences

## Deposit Geology

The Lilypad Lakes occurrences are hosted within numerous pegmatite dikes ranging from several centimetres to tens of metres wide (Taylor et al. 2005). The majority of the dikes are reported to strike in an approximately easterly direction (i.e., 240 to 270). However, numerous dikes oriented in an approximately north-trending direction are also present. Diamond drilling information indicates that the dikes are also typically continuous to a depth of at least 100 m. A number of types of pegmatite dikes were identified by Breaks and Tindle (2004). These deposits belong to the rare-element class of the LCT (lithium-cesium-tantalum) geochemical family, and include albite-type, albite-spodumene type, and complex-type (spodumene and elbaite-subtypes) pegmatites. Details regarding the specific characteristics of the 6 occurrences and deposits mentioned above are provided below.

## F ANOMALY DIKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 412328E 5722475N [occurrence 66 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NW) |
| *MNDM Township Area:* | Ferguson Lake Area |
| *Commodities:* | Ta, Cs, Li, Rb |
| *Status:* | Occurrence |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI000000000151 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The F Anomaly dike occurrence was described by Taylor et al. (2005) as a group of variously oriented pegmatites up to 3 m wide that intrude felsic intrusive and metavolcanic rocks. The dikes have similar mineralogy to the Rubellite dike and are composed of albite, quartz, rubellite, lepidolite, spodumene, green mica and potassium feldspar, with accessory pollucite and tantalum oxides. Average grades from 27 channel samples collected at surface from this occurrence were reported as 0.080% $Ta_2O_5$, 0.190% $Cs_2O$, 0.384% $Rb_2O$ and 0.416% $LiO_2$.

## JJ DIKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 410200E 5721475N [occurrence 63 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NW) |
| *MNDM Township Area:* | Ferguson Lake Area |
| *Commodities:* | Ta, Cs |
| *Status:* | Occurrence |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI000000000148 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The JJ dike occurrence was described by Taylor et al. (2005) as a narrow intrusion with an average width of 0.3 m that was traced over an east-west strike length of over 750 m. The host rocks are reported to be intermediate metavolcanic. Breaks and Tindle (2004) classified this intrusion as being an albite-type pegmatite. Taylor et al. (2005) indicated that the dike mineralogy comprises blue albite, grey quartz, pink rubellite and white pollucite, with accessory fine-grained tantalum oxides. Channel sample values of up to 0.036% $Ta_2O_5$ and 0.794% $Cs_2O$ over 1.0 m have been reported.

## POLLUCITE DIKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 411620E 5722775N<br>[occurrence 65 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NW) |
| *MNDM Township Area:* | Ferguson Lake Area |
| *Commodities:* | Ta, Cs, Li, Rb |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI000000000146 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This deposit was described by Taylor et al. (2005) as being hosted within a 1.5 to 12.5 m thick dike having a strike length of at least 30 m. The deposit is centred upon a thickened hinge area of an open S-shaped fold. The pegmatite is indicated to intrude a sequence consisting of a mixture of intermediate metavolcanic and metasedimentary rocks. Breaks and Tindle (2004) classified this intrusion as a complex spodumene-type pegmatite. Taylor et al. (2005) indicated that it is composed of ribbony dark grey quartz, lighter grey aplitic albite, coarser white potassium feldspar and grey-white spodumene with crosscutting stringers and patches of pollucite ± lepidolite. Other accessory minerals include fluorite, muscovite, apatite and fine-grained tantalum oxides. The dike is also reported to have a strong fabric that imparts a flaser texture, and to be characterized by hydrothermal alteration and replacement. Diamond drilling carried out on the Pollucite dike by Avalon Ventures Ltd. (2001) is reported to have delineated a resource of approximately 340 000 tonnes grading 0.037% $Ta_2O_5$ and 2.294% $Cs_2O$ to a depth of 300 m. Considerable potential for expansion of reserves at depth and along strike is also reported, with indications of increasing tantalum grades with depth. High $LiO_2$ and $Rb_2O$ values have also been reported from this dike, with channel sample assays of up to 1.645% and 0.484%, respectively (Avalon Ventures Ltd. 2001).

## RUBELLITE DIKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 414100E 5722605N<br>[occurrence 68 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NE) |
| *MNDM Township Area:* | Opikeigen Lake Area |
| *Commodities:* | Ta, Cs, Li, Rb |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI000000000147 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Rubellite dike deposit was described by Taylor et al. (2005) as being hosted within a 1 to 24 m thick dike having a strike length of at least 115 m in the form of a modified M-fold. The intrusion was reported to be hosted within mafic metavolcanic rock (Avalon Ventures Ltd. 2001). Breaks and Tindle (2004) classified this deposit as consisting of complex spodumene and elbaite-subtype intrusive phases, with the elbaite-subtype intrusion being only the second of its kind found in Canada. Taylor et al. (2005) indicated that the Rubellite dike is composed predominantly of large crystals of pink rubellite and purple lepidolite set in a medium-grained groundmass of blue albite and grey quartz. Other common mineral include white and pink potassium feldspar, with rubidium-rich potassium feldspar in late crosscutting fractures. Accessory minerals include spodumene, fluorite, bavenite, muscovite, pollucite and fine-grained tantalum oxides. The intrusion has a heterogeneous texture, with hydrothermal alteration and fracturing throughout. Diamond drilling on the Rubellite dike, by Avalon Ventures Ltd. (2001), delineated a minimum resource of approximately 800 000 tonnes grading 0.032% $Ta_2O_5$ over a strike length of 80 m and to a depth of 250 m. Surface channel samples from this dike are also reported to contain up to 0.689% $Cs_2O$, 0.873% $LiO_2$ and 0.585% $Rb_2O$ (Taylor et al. (2005).

## SOUTH DIKE

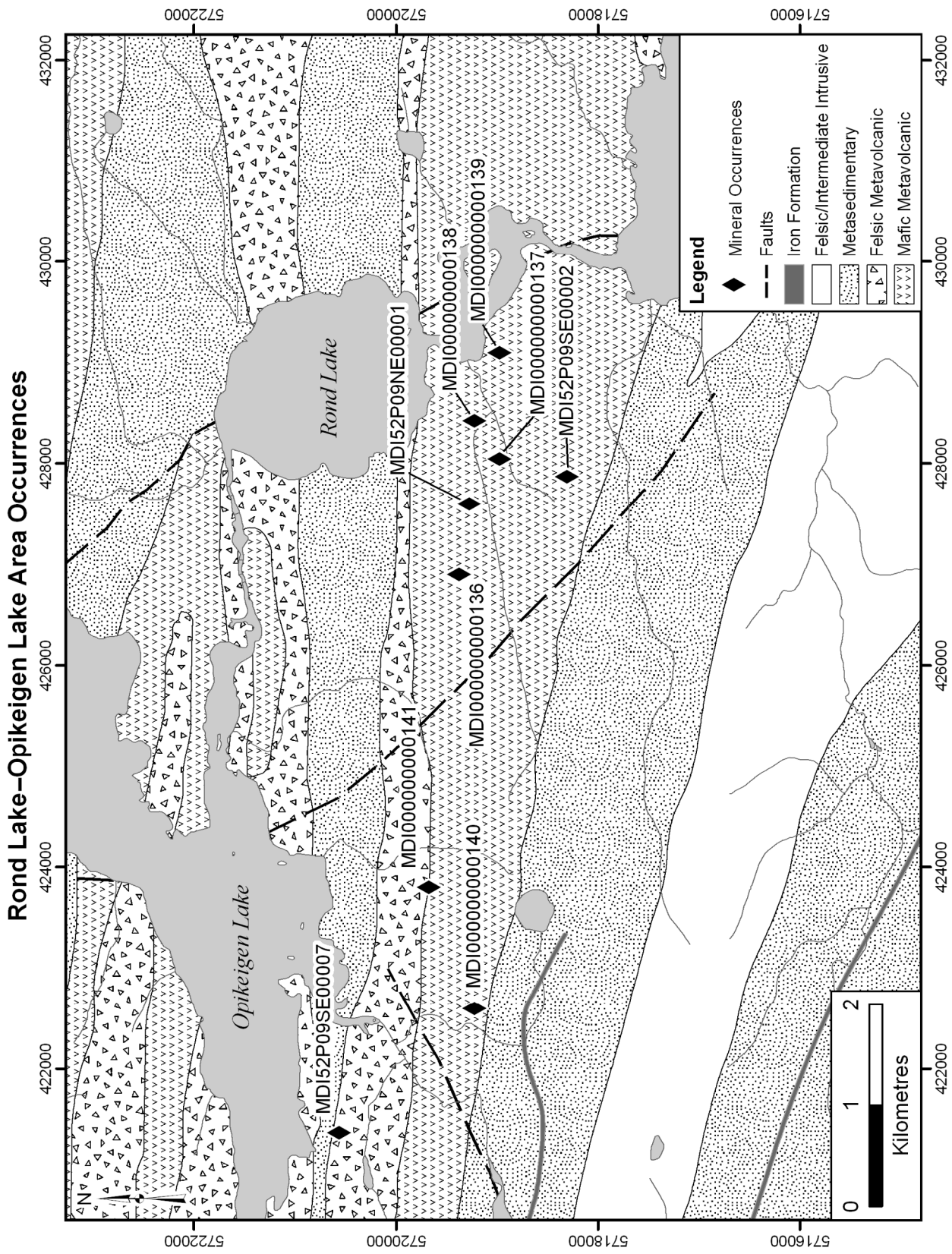
| | |
|---|---|
| *Location:* | UTM Zone 16, 413220E 5721590N<br>[occurrence 67 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NW) |
| *MNDM Township Area:* | Ferguson Lake Area |
| *Commodities:* | Ta, Cs, Li, Rb |
| *Status:* | Prospect |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI000000000150 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The South dike prospect was described by Taylor et al. (2005) as consisting of 2 main north-trending dikes having thicknesses of approximately 6 to 7 m each.. The western dike has been traced for a strike length of 75 m and the eastern dike has been traced for 45 m. The mineralogy of this dike is similar to the nearby Rubellite dike, with a slightly lower rubellite content. The most favourable diamond-drill hole assays from this occurrence include 0.085% $Ta_2O_5$, 0.128% $Cs_2O$ and 0.677% $Rb_2O$ over 8.7 m. In addition, a surface channel sample was reported to contain 0.108% $Ta_2O_5$ over 4.0 m.

## SPODUMENE DIKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 411758E 5721080N<br>[occurrence 64 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NW) |
| *MNDM Township Area:* | Ferguson Lake Area |
| *Commodities:* | Li, W |
| *Status:* | Occurrence |
| *Deposit Type:* | Rare Element Pegmatite |
| *MDI Reference Number:* | MDI52P09NW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The spodumene dike occurrence is described as a series of east-trending dikes and stringers extending over a strike length of approximately 240 m (Avalon Ventures Ltd. 2001). Most of the dikes range in width from 1.5 to 7.5 m and strike parallel to stratigraphy, with evidence of folding and structural modification. The pegmatites were described by Wallace (1978a) as intruding a mafic metavolcanic dominated sequence. Breaks and Tindle (2004) described the dikes as crudely zoned albite-spodumene-type pegmatites composed of muscovite-green spodumene-potassium feldspar-quartz-albite pegmatite and sodic aplite assemblages. Accessory minerals include red-brown garnet, blue apatite, black tourmaline and oxide minerals. Wallace (1978a) reported that grab samples collected from this occurrence assayed up to 4.07% $LiO_2$ and that a diamond-drill intersection of 10.4 m contained 1.07% $LiO_2$. From samples of drill core collected in 2000, Avalon Ventures Ltd. (2001) reported $Ta_2O_5$, $Rb_2O$ and $Cs_2O$ values of up to 0.014%, 0.306% and 0.038%, respectively. The relatively low Ta, Rb and Cs values were interpreted by Breaks and Tindle (2004) to indicate a relatively primitive geochemical signature. These dikes are also described as having undergone more deformation than most pegmatites on the property (Avalon Ventures Ltd. 2001). This observation, combined with the less-evolved geochemical signature, is consistent with an earlier time of emplacement than for the other mineralized pegmatite occurrences in this area.




NTS 52 P: Rond Lake–Opikeigen Lake area occurrences

# ROND LAKE–OPIKEIGEN LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *1997–2003*: Slam Resources carried out an exploration program consisting of geological assessments, prospecting, geophysics, diamond drilling and assaying over the area surrounding these prospects and occurrences.

## General Geology

The Rond Lake–Opikeigen Lake gold occurrences are located in an area of significant lithological and structural complexity. These occurrences are located within an approximately 15 km wide metasedimentary belt that is bounded to the north by the Cluff Lake stock and to the south by migmatites of the Kawitos batholith. The metasedimentary belt in the area of the Rond Lake–Opikeigen Lake gold occurrences were subdivided into 4 separate east-trending lithological "domains" by Lemaitre (1997). Rocks of these "domains" were mapped by Wallace (1977, 1978a), and were named the "northern volcanic belt", "northern metasedimentary belt", "southern volcanic belt" and "southern metasedimentary belt" by Lemaitre (1997). The northern volcanic belt consists of a variety of mafic to felsic metavolcanic rocks that are interbedded with oxide-facies iron formation. The northern metasedimentary belt was described by Lemaitre (1997) as comprising metasedimentary rocks containing occasional interbedded intermediate tuff. The southern volcanic belt consists of a thick sequence of felsic pyroclastic rock overlain to the south by mafic to intermediate flows and pyroclastic rock. Gabbro, iron formation and quartz-feldspar porphyry are also commonly found within this belt. Recent mapping by Hall (2005) indicated that the "northern" metasedimentary belt may be, in fact, an east-northeasterly trending unit that crosscuts the volcanic stratigraphy of the southern volcanic belt at a low angle (i.e., the northern and southern contacts have been interpreted to be faults). However, limited surface exposure of the northern metasedimentary belt rocks makes the interpretation of stratigraphic and structural relationships difficult. The majority of the gold showings that have been documented in this area occur within rocks of the southern volcanic belt. The rocks of the southern metasedimentary belt consists of metamorphosed sandstones, siltstones and shales (Hall 2005).

## Structural Geology

Foliation trends in the Rond Lake–Opikeigen Lake area generally trends east, with near-vertical dip (Hall 2004). As is typical in the Miminiska–Fort Hope greenstone belt, foliation trends are typically approximately parallel to stratigraphy.

Lemaitre (1997) indicated that shearing is observed in most outcrops in the vicinity of the gold occurrences, and identified 3 distinct orientations of shearing. These shear zones are all steeply dipping and have approximate orientations of 050, 065 and 090. Most of the shear zones also show evidence of a sinistral sense of motion. Gold mineralization is typically associated with quartz veins that occur parallel to the shear fabric. However, subordinate quartz veining associated with Riedel P and $R_1$ fabrics has also been observed at Zone 41. Five of the gold showings in this area (OL-12, OL-29, Zone 41, OL-87-17 and OL-87-18) are located in close proximity to 2 east-northeast-trending faults mapped by Hall (2005). The proximity of these interpreted faults to several gold showings suggests that they may have a genetic relationship to the observed gold mineralization. This interpretation is supported by Lemaitre's (1997) observation that the shears oriented 050 and 065 at OL-12 and OL-29 appear to be splays from larger structures.

## Deposit Geology

The geology of each of the individual deposits is described below.

## FORT HOPE GOLD MINE

| | |
|---|---|
| *Location:* | UTM Zone 16, 427873E 5718307N [occurrence 74 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SE00002 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Fort Hope gold mine claim was indicated by Taylor (2002) to be underlain by a thick succession of mafic flows and pillow basalts with minor mafic tuffs and intermediate pyroclastic units. The flows are bounded to the north by a shear zone that is interpreted to be related to a number of other nearby gold occurrences (OL-12, OL-29, OL-41). Wallace (1978a) indicated that gold mineralization occurs in east- and northeast-trending quartz-carbonate veins. Vein mineralization includes pyrrhotite, pyrite, chalcopyrite and visible gold. The vein systems are crosscut by southeast-trending fractures that commonly offset the veins, making them difficult to trace. Past exploration efforts have focussed on 2 vein systems referred to as the Shaft and California veins. The characteristics of these vein systems were summarized in Mason and White (1995, p.44-48).

Although this prospect was developed to the point where a shaft (37.5 m deep) and limited underground workings (90 m of drifting) were advanced, no gold production has ever occurred on the property. A number of bulk samples of high-grade material were reported to have been collected from this prospect by Mason and White (1995), with the most significant gold assay being 301.84 g/t Au.

## OL-12

| | |
|---|---|
| *Location:* | UTM Zone 16, 427600E 5719275N [occurrence 73 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09NE00001 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The OL-12 prospect is hosted within northeast-striking mafic metavolcanic rock and gabbro. Three separate lenses of mineralization were intersected at this location during diamond drilling conducted by Noramco Explorations in 1987 (Lemaitre 1997). The mineralized zones strike 050 and dip steeply (70 to 90) to the southeast. They have been traced for a strike length of approximately 50 m, to a depth of 200 m, and remain open along strike and at depth. Gold mineralization at this location has been interpreted to be related to 2 sets of narrow, brittle, sinistral shear zones that have been observed nearby in outcrop. The dominant set of shear zones strike 050 and have near-vertical dips. The shear zones are

typically less than 20 cm wide and commonly contain quartz veins and boudins that parallel the shear fabric. A second set of similar shears having an average orientation of 063 is also present. These shears may be related to an east-northeasterly striking fault that was mapped by Hall (2005) approximately 100 m northwest of the showing.

The gold mineralized veins encountered during diamond drilling consist of massive white to sugary blue-grey quartz containing minor disseminated pyrrhotite, pyrite and sericite. Visible gold, silver and molybdenite were reported in several drill holes at the contact between quartz veins and wall rocks. The host rocks adjacent to the veins are sheared and display significant silicification, carbonatization and biotite alteration.

Gold assays of greater than 1 g/t Au were reported in 8 of 9 diamond-drill holes advanced at this location by Noramco in 1987. The most favourable results included 3.85 g/t Au over 14.8 m in OL-87-42, 6.22 g/t Au over 7.00 m in OL-87-46, and 4.53 g/t Au over 10.5 m in OL-87-12. Two additional holes were drilled at this location in 2000 by Slam Exploration (Eastwood 2001). The most favourable reported assay was 2.61 g/t Au over 0.9 m. The drilling here reportedly encountered diabase dikes that appear to crosscut the deposit (Eastwood 2001).

## OL-29

| | |
|---|---|
| *Location:* | UTM Zone 16, 426900E 5719375N<br>[occurrence 72 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000136 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The OL-29 prospect is hosted in felsic to intermediate metavolcanic rocks that consist primarily of lapilli tuff and blue quartz-eye crystal tuff (Lemaitre 1997). The tuffs contain narrow (<0.5 m wide) horizons of argillite and sulphide-facies iron formation. Gold mineralization appears to be associated with shearing that has an average orientation of 065/65. This shearing may be related to an east-northeasterly striking fault that was mapped by Hall (2005) approximately 250 m southeast of the showing. The gold mineralized zone is described as moderately to strongly silicified, sericitized and sheared felsic metavolcanic rock containing disseminated pyrite.

Assay values exceeding 0.075 g/t Au were reported in 10 of 12 drill holes advanced through this zone by Noramco Explorations between 1987 and 1989. The mineralized zone is several metres wide and was traced over a strike length of 325 m to a depth of 110 m. The most notable assay reported from the Noramco drilling program was 1.663 g/t Au over 12.3 m (Mason and White 1995). More recent drilling of this zone carried out by Slam Resources in 2000 reported 1.34 g/t Au over a core length of 22.6 m in drill hole OL00-02 (Eastwood 2001).

## OL-87-17

| | |
|---|---|
| *Location:* | UTM Zone 16, 422600E 5719225N<br>[occurrence 70 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000140 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

According to Lemaitre (1997), Noramco Explorations advanced diamond-drill hole OL-87-17 to test horizontal loop electromagnetic (HLEM) and induced polarization (IP) geophysical anomalies associated with a magnetic feature. The drill hole intersected 6.10 g/t Au over 1.5 m in sheared mafic tuff. The mineralized horizon contained 3% disseminated pyrite and 1% thinly laminated magnetite. This occurrence is located immediately adjacent to an east-northeasterly striking fault that was mapped by Hall (2005).

## OL-87-18

| | |
|---|---|
| *Location:* | UTM Zone 16, 423800E 5719675N<br>[occurrence 71 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000141 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

According to Lemaitre (1997), Noramco Explorations advanced diamond-drill hole OL-87-18 to test HLEM and IP geophysical anomalies associated with a magnetic feature. The drill hole intersected 2.70 g/t Au over 0.5 m in chloritic tuff hosted within a thick sequence of felsic to intermediate pyroclastic rocks. The mineralized horizon is also reported to contain 20% sulphides interpreted to be a mixture of pyrite and pyrrhotite. This occurrence is located approximately 100 m north of an east-northeasterly striking fault that was mapped by Hall (2005), and is along strike with the Rich Lake occurrence 2.6 km to the west.

## RICH LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 421367E 5720567N<br>[occurrence 69 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (NE) |
| *MNDM Township Area:* | Opikeigen Lake Area |
| *Commodities:* | Au, W |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI52P09SE00007 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Rich Lake gold-scheelite occurrence consists of a number of west-southwest-trending quartz veins hosted by sheared, tuffaceous, mafic metavolcanic rock. The veins were described by Smyk et al. (2005) as consisting of sugary, recrystallized quartz that displays a "crack-seal" texture with biotite and amphibole septa. The main vein (Zebra vein) was indicated by Lemaitre (1997) to have an orientation of 263/80, ranges from 10 to 40 cm thick, and can be traced along strike for approximately 80 m. East of the location where the vein pinches out, the shear contains a quartz vein boudin train. Mineralization in the main quartz vein was described by Prest (1944a) as consisting of scheelite, arsenopyrite, pyrrhotite and pyrite. No significant wall-rock alteration is reported adjacent to the mineralized quartz vein.

The most favourable gold assays reported by Lemaitre (1997) from this showing were obtained by Noramco Explorations during their 1987 exploration program and include 6.09 g/t Au from a surface grab sample and 3.69 g/t Au over 0.7 m in diamond-drill hole OL-87-7. The most favourable tungsten assay reported from this showing was 1.50% $WO_3$ in a surface grab sample result reported by Thurston and Carter (1970).

## ROND LAKE

| | |
|---|---|
| *Location:* | UTM Zone 16, 429100E 5718975N<br>[occurrence 77 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000139 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Rond Lake occurrence was described by Lemaitre (1997) as a 45 cm wide shear zone in massive dark green volcanic rock. The shear zone is oriented 078/68 and contains 5 to 10% pyrrhotite, 15% fine-grained sericite, and 70 to 75% sugary quartz. The host rocks are silicified up to 5 m from the shear zone boundary.

The most significant assay reported from this occurrence is 0.77 g/t Au from a 1 m channel sample collected by Noramco Explorations in 1987.

## ZONE 41

| | |
|---|---|
| *Location:* | UTM Zone 16, 428050E 5718975N [occurrence 75 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Prospect |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000137 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Zone 41 prospect was reported by Lemaitre (1997) to be hosted in an altered and sheared gabbro intrusion. Mineralization is generally associated with quartz veins in approximately shears oriented approximately 264/45. Subordinate veins interpreted to be related to the main ones generally strike 060 and 110. The mineralized veins at this location consist of sugary white to blue-grey quartz with 5% chlorite, 0 to 5% tourmaline, 0 to 1% molybdenite and 0 to 1% pyrite. Trace sphalerite has also been reported in the veins. Veins up to 40 cm thick were reported during drilling, whereas the main surface exposure ranges from 3 to 20 cm thick. Alteration within the sheared gabbro is described as green, white and brown streaks of chlorite, carbonate and biotite.

Gold assays greater than 1 g/t Au were obtained from 3 diamond-drill holes that were advanced at this location by Noramco Explorations in 1988 and 1989. The highest reported assay was 6.73 g/t Au over 0.4 m in OL-88-412; a grade of 1.645 g/t Au over a wider interval of 3.2 m was reported from a deeper portion of the same drill hole. Drilling indicates that the mineralized zone extends for a strike length of at least 65 m.

## ZONE 41 EXTENSION

| | |
|---|---|
| *Location:* | UTM Zone 16, 428425E 5719225N [occurrence 76 on Map 2 (back pocket)] |
| *NTS Map Sheet:* | 52 P/9 (SE) |
| *MNDM Township Area:* | Rich Lake Area |
| *Commodities:* | Au |
| *Status:* | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number:* | MDI000000000138 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Zone 41 extension was described by Lemaitre (1997) as a surface occurrence that consists of 2 mineralized quartz veins that are hosted in sheared gabbro. The veins are oriented approximately 270/45, and are likely to represent an eastern extension of Zone 41 (approximately 400 m away), where a similar vein system has been documented. The north vein ranges from 2 to 15 cm wide, is exposed over a strike length of 20 m, and consists of blue-grey quartz with trace molybdenite. The southern vein is 10 to 30 cm wide, and occurs in a 1.5 m wide shear zone. The northern boundary of this shear is defined by a 30 cm wide quartz-feldspar porphyry dike. The vein, dike and shear foliation are reported to be complexly folded near the eastern edge of the outcrop exposure.

The most significant assay reported from this occurrence is 0.77 g/t Au from a 1 m channel sample collected by Noramco Explorations in 1988.

# MINERAL OCCURRENCES OF THE CENTRAL AND EASTERN UCHI DOMAIN: FORT HOPE AREA (NTS 42 M)

## Summary of Occurrence Areas: Miminiska–Fort Hope Greenstone Belt

### NORTON LAKE AREA

Norton Lake Cu-Ni-Co-PGE Deposit
Norton Lake Iron Occurrence

### RESERVE CREEK AREA

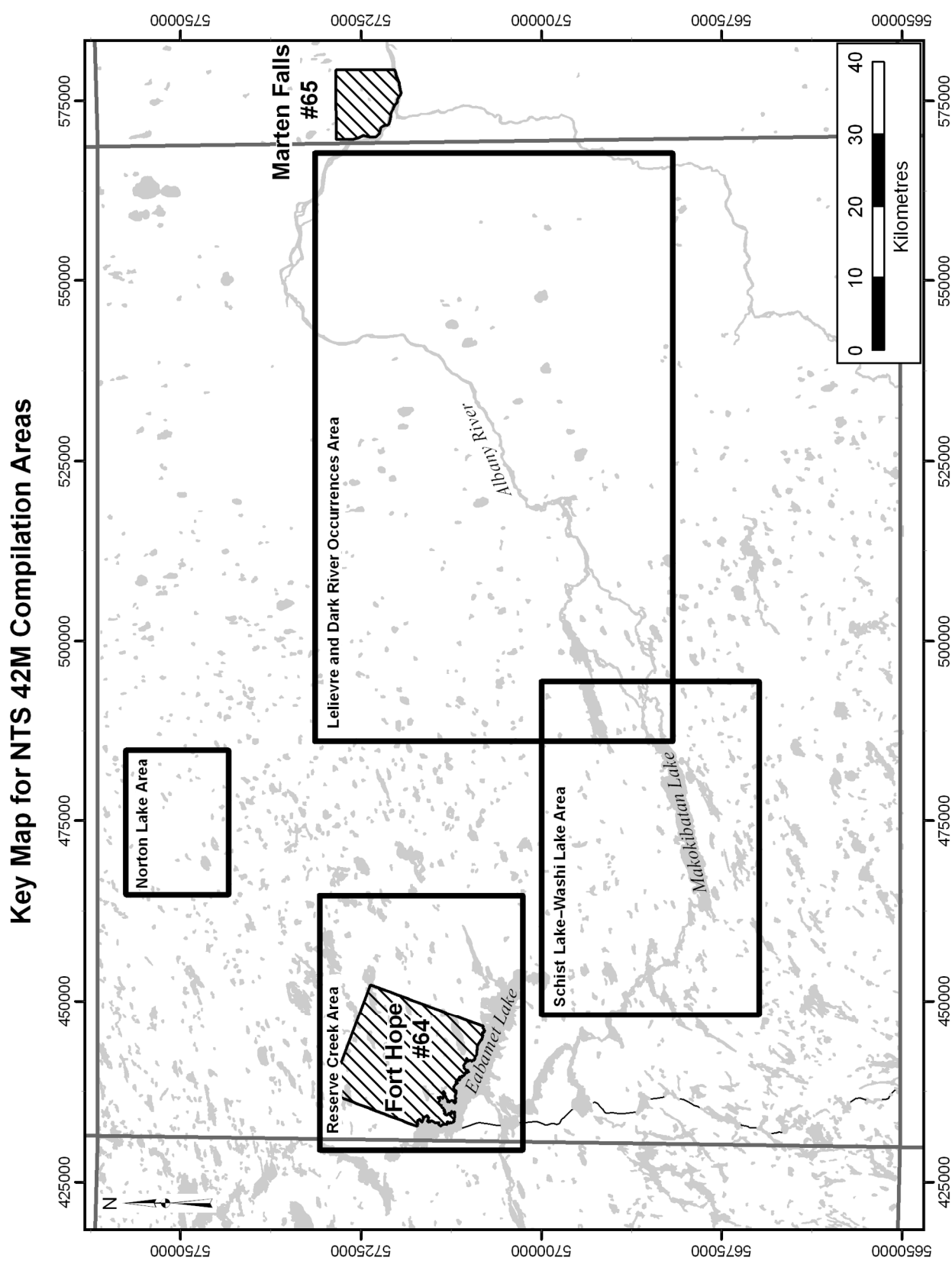
Dome Occurrence
Pioneer Lake Occurrence
Reserve Creek Prospect
Veekay Lake Occurrence
Zulapa Prospect

### SCHIST LAKE–WASHI LAKE AREA

Asarco Occurrence
Asarco Sample Location No. 6
Barringer Occurrence
GSC Map 56-1963 Copper Occurrence
Schist Lake Occurrence

### LELIEVRE OCCURRENCE AND DARK RIVER OCCURRENCES AREAS

Dark River Iron Occurrence
Lelievre (Goff Lake) Iron Occurrence




Key map for NTS 42 M compilation areas

# NORTON LAKE AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995). *2001 to Present*: Since acquiring the property in 2001, East West Resource Corporation and Cascadia Resources have carried out a comprehensive exploration program consisting of re-assaying of previous drill core samples, a soil geochemical survey, airborne, ground and borehole geophysical surveys, diamond drilling, and geological mapping.

## General Geology

The Norton Lake area is located in the northeastern portion of the Fort Hope–Miminiska greenstone belt, in an area of limited bedrock exposure. The available geological information indicates that much of the area is underlain by a mafic metavolcanic-dominated supracrustal rock sequence that is dominated by massive to pillowed metavolcanic rocks (Johnson 2005). This mafic metavolcanic sequence was also reported by Johnson (2005) to contain occasional metasedimentary layers and mafic intrusive bodies. A significant folded iron formation horizon has also been identified within this sequence based on airborne magnetometer data. A geological compilation map prepared by Johnson (2005) indicates the presence of a metasedimentary rock sequence immediately to the south of the Norton Lake prospect (MDI42M14NW00008).

The supracrustal rocks of this area are surrounded to the north, south and west by felsic intrusive rock.

The supracrustal rocks of the Norton Lake area were previously interpreted by Stott and Corfu (1991) to be stratigraphically equivalent to the Northern Pickle assemblage of the Pickle Lake greenstone belt. However, the Northern Pickle assemblage was re-defined by Young (2003) as part of the Pickle Crow assemblage (>2860 Ma). Recent geochemical and geochronological data collected by Johnson (2005) appear to be consistent with the interpretation that these rocks are equivalent to the Northern Pickle of Pickle Crow assemblage (tentative age determination of 2896 to 2939 Ma).

## Structural Geology

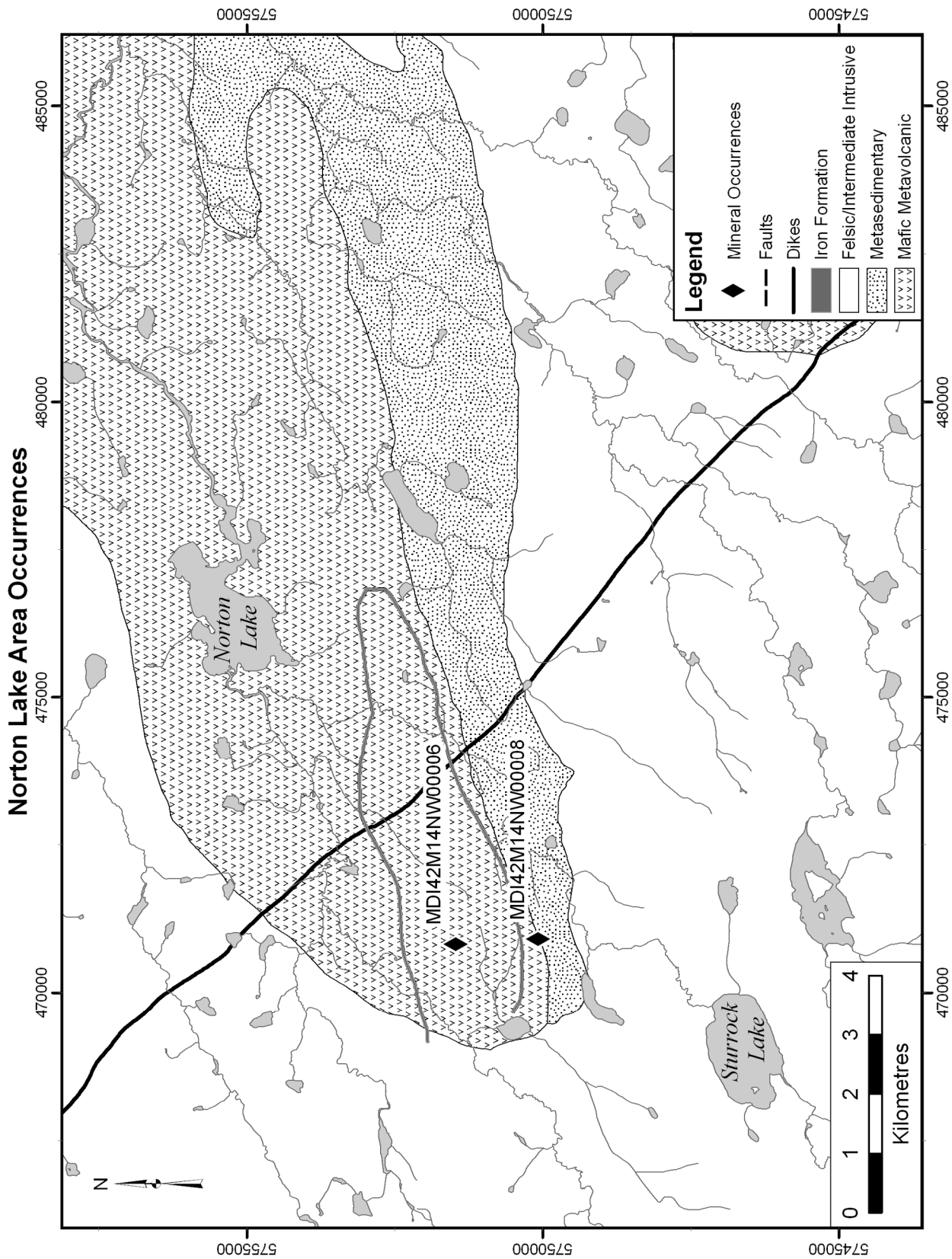
The major structural feature in the vicinity of the deposit is a large antiformal fold (overturned syncline) with an east-plunging axis (Johnson 2005). This folding is illustrated by the magnetic response of the banded iron formation unit in airborne magnetometer survey data. Magnetometer survey data also indicate a number of north-northwesterly trending faults.

Foliation and stratigraphy generally strike approximately east (075 to 095) in the vicinity Norton Lake prospect (on south limb of overturned syncline), with steep dips (70 to 90°) toward the north (Johnson 2005). However, further to the northeast, in the vicinity of the nose of the fold, the strike of stratigraphic marker horizons change, reflecting the fold geometry. The orientation of stratigraphic horizons on the north limb of the fold also change to dip steeply southward.

No major fault structures are known to exist in this area.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 42 M: Norton Lake area occurrences

## NORTON LAKE CU-NI-CO-PGE DEPOSIT

| | |
|---|---|
| *Location:* | UTM Zone 16, 470912E 5750083N<br>[occurrence 79 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet:* | 42 M/14 (NW) |
| *MNDM Township Area:* | Norton Lake Area |
| *Commodities:* | Ni, Cu, Co, PGE |
| *Status:* | Developed Prospect with Reserves |
| *Deposit Type:* | Mafic–Ultramafic Intrusion-Hosted Cu-Ni-PGE |
| *MDI Reference Number:* | MDI42M14NW00008 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt /<br>Pickle Crow assemblage |

The Norton Lake Cu-Ni-Co-PGE deposit is hosted in a mafic to ultramafic intrusion that is composed dominantly of pyroxenite with subordinate gabbro and leucogabbro phases. The intrusion is located near the contact between metasedimentary and mafic metavolcanic dominated rock sequences, and was interpreted by Johnson (2005) to be related to a series of relatively small mafic to ultramafic intrusions that have been mapped in the area. The host intrusion was described by Jobin-Bevans and Kelso (2005) as a "discrete stock-like mafic–ultramafic body". The mafic metavolcanic sequence that overlies the deposit is dominated by pillowed and massive flows and hosts a significant iron formation unit. The sedimentary sequence that underlies the deposit consists largely of argillites and sandstones (based on limited exposure and examination of diamond-drill core). Adjacent to the deposit, this unit has been described in drill logs as "quartzite" and "amphibolite tuff". The amphibolite immediately underlying the deposit was interpreted alternatively by Jobin-Bevans and Kelso (2005) as sheared pyroxenite.

The Norton Lake Cu-Ni-Co-PGE orebody (Norton Zone) consists of 2 'lenses' that average approximately 7 m thick and have been traced over a strike length of approximately 300 m, and to a depth of up to 400 m. The deposit strikes between 250 to 270° and dips approximately 60° to the north. The western limit of the deposit is defined by a fault interpreted from airborne electromagnetic data to trend at 107°. The projected limits of the deposit are currently open to the northeast.

The orebody consists of semi-massive to massive sulphides (average 30 to 35% by volume) within a mafic to ultramafic matrix. The ore is commonly brecciated, with fragments of host rock in a deformed sulphide-bearing matrix. The breccia zones also contain cherty fragments that have been interpreted to be fragments of local iron formation. The major mineralogical components of the deposit include pyrrhotite, chalcopyrite, pentlandite and pyrite. Minor to trace components of the ore include magnetite, ilmenite, violarite, molybdenite, galena, sphalerite, skutterudite and various platinum group and silver minerals.

Johnson (2005) suggested 2 stages of mineralization, with the first resulting from sulphide saturation through assimilation of a previously existing iron formation, and the second involving hydrothermal remobilization and enrichment of copper and PGE values. The observation of brecciated cherty fragments in the orebody supports the iron formation assimilation hypothesis, whereas the presence of later crosscutting chalcopyrite veins provides evidence of sulphide remobilization.

A second occurrence, referred to as the South Zone, has been identified immediately to the south of the Norton Zone and is interpreted to be the fault-displaced western extension of the deposit.

A deposit with the following reserve characteristics has been delineated as of December 2005 (Jobin-Bevans and Kelso 2005). The sum of measured and indicated reserves based on a 0.3% Ni cut-off grade are 2 258 654 tonnes averaging 0.67% Ni, 0.61% Cu, 0.03% Co and 0.46 g/t Pd.

Johnston (2005) suggested that this deposit is likely to have been emplaced in a back-arc tectonic setting.

## NORTON LAKE IRON OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 470827E 5751473N<br>[occurrence 78 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/14 (NW) |
| *MNDM Township Area*: | Norton Lake Area |
| *Commodities*: | Fe |
| *Status*: | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number*: | MDI42M14NW00006 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt /<br>Pickle Crow assemblage |

This occurrence is based upon a report of a "lean" magnetite iron formation outcrop approximately 1.6 km southwest of Norton Lake (Jackson 1962, *see* marginal notes). The deposit is located within a sequence dominated by mafic to intermediate metavolcanic rocks. A more detailed description of these rocks is provided elsewhere in this document under the heading "Norton Lake Cu-Ni-Co-PGE Deposit".

# RESERVE CREEK AREA OCCURRENCES

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: Details regarding *pre-1995* exploration history are provided in Mason and White (1995). *2003 to Present*: Slam Exploration and Eastmain Resources have carried out an exploration program consisting of geological mapping, prospecting, channel sampling, diamond drilling, assays and geophysical (IP) surveys over the occurrences and a series of claims extending approximately 6 km to the east.

## General Geology

The Reserve Creek area is underlain by a complex metavolcanic-dominated supracrustal rock sequence that was intruded by Archean mafic and felsic intrusive rocks and Proterozoic diabase dikes. The supracrustal rock sequence, which was assigned to the St. Joseph assemblage by Stott and Corfu (1991), is dominated by mafic metavolcanic rock that have been mapped (Prest 1942a; Thurston and Carter 1969, 1970; Canova, Brown and Perkins 2006) as pillow basalts, mafic tuffs and schists. The mafic metavolcanic rock is interbedded with felsic to intermediate metavolcanic rocks mapped as rhyolite, agglomerate and tuff. Interflow sediments have also been reported. A number of gabbro and diorite intrusions (or coarse-grained massive mafic to intermediate flows) occur within the metavolcanic assemblage. The mafic intrusive rock generally strike parallel to the metavolcanic rock (i.e., at approximately 70°).

The metavolcanic rock were intruded to the south by a granitic intrusion described by Canova, Brown and Perkins (2006) as a massive to weakly foliated albite granite. However, near the contact with the metavolcanic rock, this intrusion has been described as a medium-grained, light brown, locally oxidized, banded and foliated quartz-feldspar gneiss containing 1% pyrite.

Quartz-carbonate veins and disseminated sulphide mineralization are commonly reported near the metavolcanic–granite contact in the vicinity of Reserve Creek.

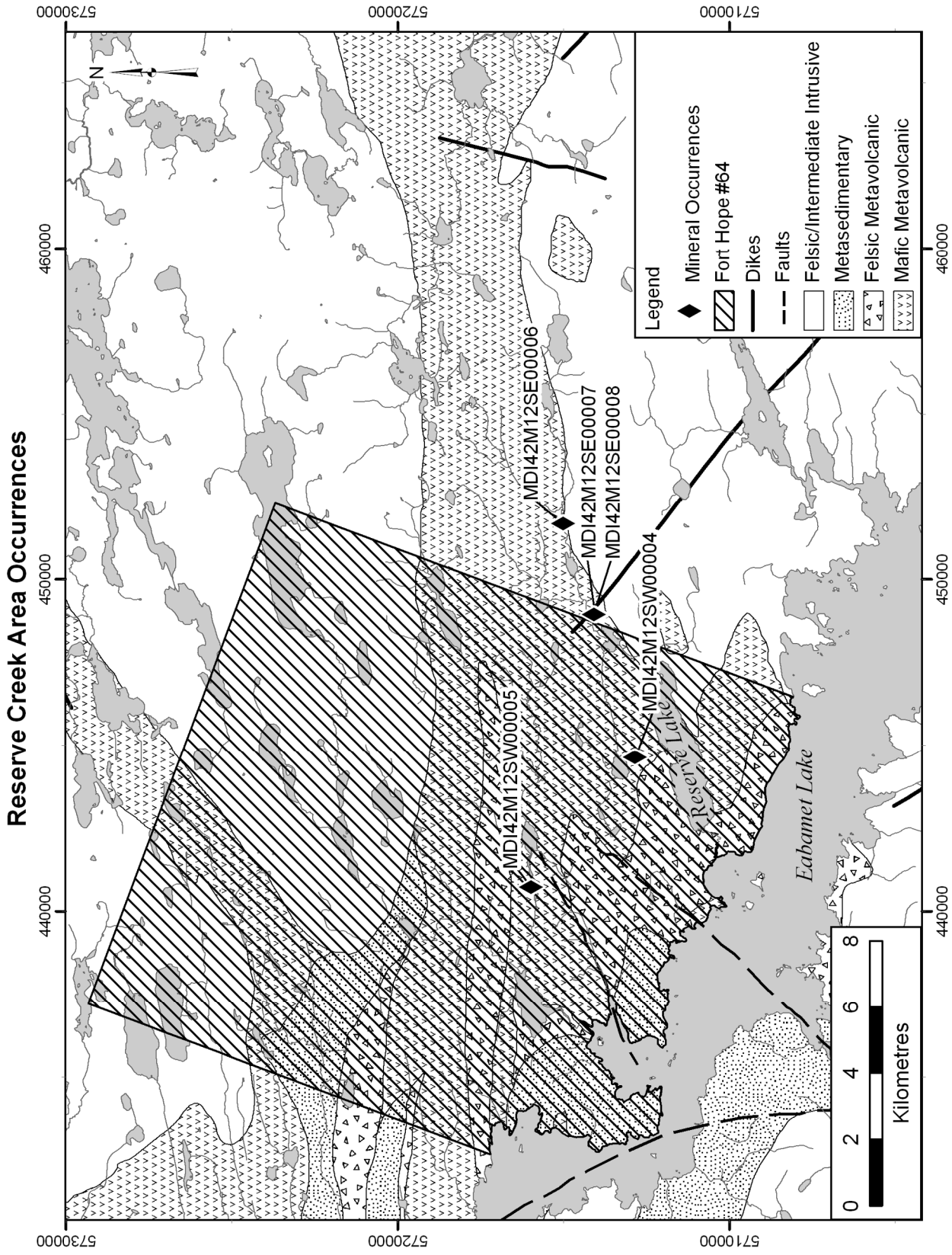
## Structural Geology

The most notable structural feature that has been observed in the Reserve Creek area is an approximately 070-striking, near-vertical deformation zone that is located within a metavolcanic rock-dominated sequence located immediately north of the contact with a granitic intrusion. In the vicinity of Reserve Creek, this deformation zone contains a number of gold, copper and tungsten occurrences that are associated with a magnetic sulphide horizon and quartz-carbonate veins that generally parallel the steeply dipping, 070-striking shear structures.

The Reserve Creek area is also located immediately east of the interpreted southeast end of the North Caribou Lake–Totogan Lake shear zone. This is a major northwest-striking, regional transcurrent shear zone (Osmani and Stott 1988) that is associated with gold mineralization at the Musselwhite Mine. Prest (1942a) also mapped 2 northeast-striking fault zones that are located to the northwest of Reserve Creek. One of these structures may be associated with gold mineralization that has been documented near Pioneer Lake.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 42 M: Reserve Creek area occurrences

## DOME OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 448935E 5714043N<br>[occurrence 82 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/12 (SE) |
| *MNDM Township Area*: | Veekay Lake Area |
| *Commodities*: | Cu, Mo, Au |
| *Status*: | Discretionary Occurrence |
| *Deposit Type:* | Porphyry |
| *MDI Reference Number*: | MDI42M12SE00007 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Dome occurrence is based on reports by Prest (1944a) of the observation of the frequent occurrence of quartz veins on the south side of Reserve Creek, to the south of the Reserve Creek gold-copper-tungsten prospect. The veins south of the creek were reported to contain much chalcopyrite and traces of molybdenite, but very low gold values. These veins are located immediately north of the Reserve Lake granite and may be genetically related (e.g., porphyry-type mineralization).

## PIONEER LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 440735E 5715977N<br>[occurrence 80 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/12 (SW) |
| *MNDM Township Area*: | Reserve Lake Area |
| *Commodities*: | Au |
| *Status*: | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number*: | MDI42M12SW00005 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The geology of the area in the vicinity of this occurrence was mapped by Prest (1942a) and Thurston and Carter (1969, 1970). Information from these sources indicate that the Pioneer Lake occurrence is located in an area that is largely underlain by intermediate to mafic metavolcanic and metasedimentary rocks. However, numerous other rock types have also been reported in this area. Prest (1944a) referred to the sedimentary rocks north of Pioneer Creek as 'Timiskaming conglomerate' and noted that the intermediate to mafic metavolcanic rocks near Pioneer Creek have undergone significant carbonatization. White weathering rhyolites, porphyry dikes and gabbroic intrusive rock were also described in this area.

The Pioneer Lake occurrence consists of 2 showings (No. 1 and No. 2 discoveries) documented by Prest (1944a). The No. 1 discovery was located on the south side of Pioneer Lake and is poorly documented, although favourable gold assays were reported to have been obtained from this occurrence. The No. 2 occurrence was located one claim north of Pioneer Lake, and is described as being hosted in a quartz vein up to 12 feet wide and over 300 feet long. Additional gold-bearing zones associated with quartz stringers oriented parallel to the volcanic host rock schistosity were also documented. Vein mineralization was reported to include quartz, carbonate, arsenopyrite, pyrite and occasional pyrrhotite. It is important to note that the gold at this location was only found in veins that were mineralized with arsenopyrite. Prest (1944a) also noted that the mineralization was located adjacent to a porphyry dike that caused an appreciable magnetic disturbance. Extensive iron carbonate alteration was also noted in the volcanic host rocks.

The area of the Pioneer Lake occurrence is located in close proximity to 2 significant northeasterly striking faults mapped by Prest (1942a). A north-striking fault was also interpreted to be present in this area. It is probable that the occurrence of the gold mineralized vein system at this location was associated with the migration of hydrothermal fluids through one or more of these fault structures.

## RESERVE CREEK PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 448950E 5714080N<br>[occurrence 83 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/12 (SE) |
| *MNDM Township Area*: | Veekay Lake Area |
| *Commodities*: | Au, Ag, W, Cu, Mo |
| *Status*: | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number*: | MDI42M12SE00008 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Reserve Creek prospect consists of a number of mineralized zones that are discussed separately below.

*A-Zone and B-Zone (448950E 5714305N):* The Reserve Creek A- and B-Zones host gold mineralization that is associated with what Canova, Brown and Perkins (2006) described as a sheared, silicified magnetic tuff (or magnetic sulphide horizon). This unit contains 5 to 8% disseminated magnetite and 0.5% pyrrhotite. These zones also host quartz carbonate veinlets that are commonly boudinaged parallel to the foliation plane and mineralized with pyrite and chalcopyrite. Chlorite and weak carbonate alteration have also been noted in this zone. Mason and White (1995) noted that mineralization in the magnetic sulphide horizon appears to predate mineralization in the quartz-carbonate veins, and that biotite alteration postdates both phases of sulphide mineralization. The gold-bearing mineralization in the A- and B-Zones is interpreted to be located within the same stratigraphic horizon. The total strike length of these zones is approximately 400 m. Canova, Brown and Perkins (2006) interpreted geological and geophysical data collected from the property as indicating that the magnetic tuff horizon is continuous for approximately 1200 m east of the currently defined eastern limit of the A-Zone. The gold-mineralized magnetic sulphide horizon hosting the A- and B-Zones has been noted to pinch and swell along strike, with the defined zones representing 2 separate gold-bearing 'shoots'. Horner (1989) indicated that the magnetic sulphide zone ranges from approximately 7.5 to 17 m wide in the A-Zone, and 3.5 to 21 m wide in the B-Zone. Both zones strike approximately 70° and dip steeply (75 to 88°) toward the north.

Kidd (1982) calculated gold reserves for these zones as follows: the A-Zone with 271 886 tons averaging 0.0411 ounces gold per ton; and the B-Zone with 129 045 tons averaging 0.0469 ounces gold per ton. This estimate predates National Instrument 43-101 and should be considered only to represent an inferred mineral resource.

*C-Zone (449040E 5714295N):* The Reserve Creek C-Zone was described by MacLeod (1981) as a quartz vein located 220 feet east of the A-Zone. A number of surface samples and samples from diamond drilling returned significant gold assays.

*D-Zone (448920E 5714355N):* The Reserve Creek D-Zone was described by MacLeod (1981) as consisting of a steeply dipping shear in andesitic volcanic rock. The surface exposure contains quartz stringers mineralized with pyrite, pyrrhotite and scheelite. Significant $WO_3$ values have been reported from surface sampling (1.78% over 0.9 m) and diamond-drill core (1.99% over 0.8 m). A significant gold assay of 11.8 g/t Au was also reported from this zone over an interval of 0.6 m in Hemlo Gold drill hole RC-94-1.

*E-Zone (449450E 5714345N):* The E-Zone was described by MacLeod (1981) as scheelite mineralization along fractures and disseminated in a coarse-grained andesitic flow. Significant $WO_3$ values (up to 0.936%) were reported in assays from this zone.

*Pit Zone (449900E 5714485N):* The Reserve Creek Pit Zone was identified by Canova, Brown and Perkins (2006) and is located within a mafic metavolcanic unit that is cut by numerous 0.3 to 1 m wide quartz veins. These veins are oxidized along their margins and contain pyrite and chalcopyrite mineralization. A grab sample of massive sulphide from an old test pit in this unit assayed 1.82 g/t Au.

*New Zone (449050E 5714485N):* The Reserve Creek New Zone is located approximately 185 m northeast of the A-Zone in rocks described by Canova, Brown and Perkins (2006) as an oxidized silicified mafic tuff. A sample of quartz-vein material from this location assayed 1.85 g/t Au.

The Reserve Creek prospect occurrences appear to be related to the nearby Zulapa (MDI42M12SW00004) and Veekay Lake (MDI42M12SE00006) occurrences, which are located along the same approximately 070-striking deformation zone. The type of mineralization reported at these occurrences (gold associated with chalcopyrite, scheelite, magnetite, pyrite, pyrrhotite, biotite alteration), the reported occurrence of molybdenite in the area south of Reserve Creek (Prest 1944a), and the proximity of the occurrences to a felsic intrusion indicate the possibility that these occurrences may be of the alkalic porphyry type described by Rogers et al. (1995).

## VEEKAY LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 451700E 5715006N<br>[occurrence 84 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/12 (SE) |
| *MNDM Township Area*: | Veekay Lake Area |
| *Commodities*: | Cu, Au, Pb |
| *Status*: | Discretionary Occurrence |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number*: | MDI42M12SE00006 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

Irbe (1961) described sulphide mineralization in the volcanic rock, quartz veins and granite that was encountered during diamond drilling at this location. Disseminated iron sulphides were reported to be present throughout the mafic volcanic rock, with pyrrhotite present in coarse-grained material (i.e., massive flows or intrusions). Quartz veins were noted in shears and fractures located in the vicinity of the granite. These veins were mineralized with pyrite, chalcopyrite and galena at the wall rock contacts. Disseminated pyrite was also noted within the granite.

Rocks in the vicinity of the occurrence were reported by Irbe (1961) to generally strike at approximately 080° with steep dips toward the north. Local strike and dip variations of up to 20° were noted. Fault breccia was reported in one diamond-drill hole at a location immediately below Reserve Creek. Irbe (1961) interpreted this to be indicative of an approximately east-striking fault structure that parallels the contact between the volcanic rock to the north and the granite intrusion to the south. A number of northeasterly striking faults were also interpreted to be present in the area, with one being intruded by a later diabase dike.

Mineralization at this location is likely to be related to the same tectonic events that produced the nearby Reserve Creek (MDI42M12SE00008) and Zulapa (MDI42M12SW00004) occurrences that are located along strike to the west.

## ZULAPA PROSPECT

| | |
|---|---|
| *Location:* | UTM Zone 16, 444646E 5712843N<br>[occurrence 81 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/12 (SW) |
| *MNDM Township Area*: | Reserve Lake Area |
| *Commodities*: | Au, Cu, Zn, Pb |
| *Status*: | Developed Prospect with Reserves |
| *Deposit Type:* | Lode Gold (Alkalic Porphyry?) |
| *MDI Reference Number*: | MDI42M12SW00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

The Zulapa prospect area was described by Darling (1962) as being underlain by a series of acid and basic rocks oriented at approximately 250/60, and located immediately north of the main Reserve Lake granite. Oja (1963) described the rocks of the area as primarily metamorphosed biotite-garnet quartzite (i.e., sedimentary rocks) intruded by sericitized quartz porphyry units. The quartzite was reported to have a strong magnetic response, whereas the porphyry coincides with magnetic lows. This occurrence is located along strike with the nearby Reserve Creek gold prospect (MDI42M12SE00008).

Mineralization in the vicinity of the Zulapa prospect was reported by Darling (1962) to have been found in numerous quartz veins located in area approximately 300 m long by 120 m wide. The mineralized quartz veins are associated with 2 late-stage brittle fracture systems oriented at 270/55 and 080/90. Gold mineralization was further reported to be largely confined to altered, sericitized, porphyritic dacite that was described by Oja (1963) as quartz porphyry intrusions. Sulphide minerals including pyrite, chalcopyrite, sphalerite and galena were also reported to be associated with the gold. Magnetite and pyrrhotite mineralization were reported to occur largely outside of the sericitic gold mineralized zones.

The relatively complex stockwork of veins that characterizes the Zulapa prospect was reported by Oja (1963) to have made it difficult to obtain a reliable ore grade estimate for the deposit, which he estimated to indicate a mineable potential of 170 000 tons to a depth of 300 feet and 300 000 tons to a depth of 700 feet.

The type of mineralization reported in the Zulapa prospect (gold associated with pyrite, chalcopyrite, magnetite, pyrrhotite, sphalerite and galena), the occurrence of mineralization in rocks described by Oja (1963) as porphyry intrusions, and the proximity of the occurrences to a larger felsic intrusion indicate the possibility that these occurrences may be of the alkalic porphyry type described by Rogers et al. (1995).

# SCHIST LAKE–WASHI LAKE AREA OCCURRENCES

***Access***: Access via air from Nakina, Pickle Lake or Armstrong.

***Exploration History***: Details regarding *pre-1995* exploration history are available in Mason and White (1995).

## General Geology

The area between Schist Lake and Washi Lake is underlain by a belt of supracrustal rocks that Thurston and Carter (1970) indicated included an approximately 1200 m thick sequence of metasedimentary rocks that comprises interbedded quartzite, arkose, greywacke, conglomerate and minor felsic metavolcanic rock. A mafic metavolcanic rock-dominated sequence occurs immediately to the north of the metasedimentary rocks, as well as to the southwest in a southeasterly trending belt that approximately parallels the course of the Albany River between Frenchman's Rapids and the west end of Makokibatan Lake.

Granitic intrusive rocks occur at the northern, southwestern and southern boundaries of the supracrustal belt. An intrabelt felsic intrusion in the area between Schist Lake and Makokibatan Lake was also mapped by Thurston and Carter (1970) .

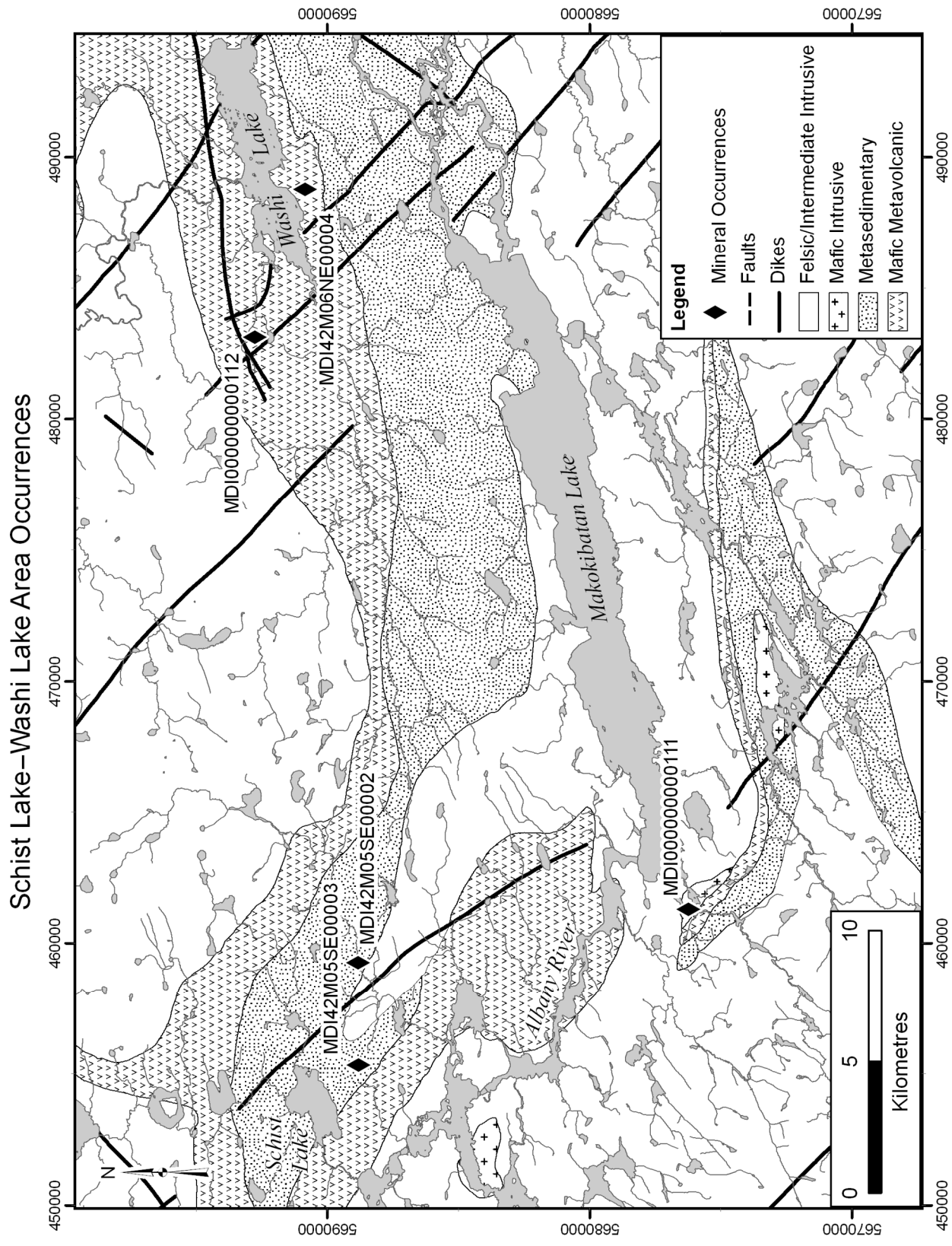
The southern boundary of the supracrustal rock sequence represents a transition zone to the migmatitic rock of the English River basins. A number of gabbroic intrusions in this boundary area were also mapped by Thurston and Carter (1970).

## Structural Geology

The most notable geological structures mapped in the Schist Lake–Washi Lake area include an approximately east-northeast-trending anticline centred on Washi Lake (Thurston and Carter 1970) and an approximately parallel anticline located immediately north of Makokibatan Lake. Thurston and Carter (1970) also indicated that the entire supracrustal rock sequence in the area has been folded about a synclinal axis that extends southeastward from Schist Lake to Makokibatan Lake.

## Deposit Geology

The geology of each of the individual deposits is described below.




NTS 42 M: Schist Lake–Washi Lake area occurrences

## ASARCO OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 455343E 5688815N<br>[occurrence 85 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/5 (SE) |
| *MNDM Township Area*: | Schist Lake Area |
| *Commodities*: | Au |
| *Status*: | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number*: | MDI42M05SE00003 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt /<br>Unnamed metasedimentary assemblage |

The Asarco occurrence is located within a sequence of metasedimentary rocks described by Mongeau (1968) as consisting of quartzite, sericite and sericite-chlorite phyllite, argillite, quartz-feldspar-biotite-hornblende schist, graphitic argillite, meta-tuff and quartz-garnet-hornblende gneiss. The mafic gneiss was reported to commonly contain disseminated magnetite and pyrrhotite as well as occasional graphite. In 1968, Asarco carried out a diamond-drilling program that focussed on testing a number of geophysical anomalies in this more-or-less west-trending metasedimentary belt in the area between Schist Lake and the eastern end of Washi Lake. The majority of the geophysical conductors were found to be caused by massive pyrrhotite (sulphide-facies iron formation) and/or graphite. Intermediate to mafic metavolcanic rocks are present immediately to the southwest of the occurrence, and a small felsic intrusion has been mapped to the east (Thurston, Carter and Riley 1972).

The most significant assay obtained by Asarco from their diamond-drill program (results reported from 15 holes) was a value of 0.04 ounces gold per ton (1.1 g/ton) obtained over a length of 2.5 feet from drill hole No. 12. Drill hole No. 12 was advanced to test a northwest-trending electromagnetic conductor, and the anomalous assay was obtained from a sample of material logged as massive pyrrhotite at the contact between magnetite iron formation and andesite. Narrow quartz veins (approximately 0.5 inch wide) with 20 to 25% sulphides were logged in this drill hole at a level approximately 3 m below the sampled horizon. No gold assays were reported from the quartz vein material.

## ASARCO SAMPLE LOCATION NO. 6

| | |
|---|---|
| *Location:* | UTM Zone 16, 483128E 5692760N<br>[occurrence 88 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/6 (NE) |
| *MNDM Township Area*: | Washi Lake Area |
| *Commodities*: | Cu |
| *Status*: | Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number*: | MDI000000000112 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This occurrence is located in an area that was mapped by Prest (1942b, 1944b) as being composed largely of mafic to intermediate metavolcanic rocks intruded by numerous feldspar porphyry dikelets. Northwest- and west-trending diabase dikes have also been mapped in the immediate vicinity of the occurrence. Schistosity in this area is oriented at an azimuth of approximately 075°.

Little information is available regarding the structural geology in the vicinity of this occurrence. However, Asarco mapping (Thunder Bay Resident Geologist's office, mineral deposit file 42M06NE–Asarco Exploration Company of Canada Limited) suggests that stratigraphy and foliation in the vicinity

of the occurrence strike approximately 075°. Shearing was also reported at the sample location. This showing is located in rocks interpreted by Stott and Corfu (1991) as being part of the St. Joseph assemblage.

A surface grab sample of bedrock collected by Asarco Exploration in the late 1960s at this location is reported to have assayed 2.51% Cu (Thunder Bay Resident Geologist's office, mineral deposit file 42M06NE–Asarco Exploration Company of Canada Limited). The sample was described as an andesite specimen containing 5% chalcopyrite in shears. The sample was also reported to have been taken approximately 2 feet away from a quartz-feldspar porphyry sill.

## BARRINGER OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 488790E 5690851N<br>[occurrence 89 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/6 (SE) |
| *MNDM Township Area*: | East of Makokibatan River Area |
| *Commodities*: | Sulphides |
| *Status*: | Discretionary Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number*: | MDI42M06NE00004 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This occurrence is located beneath the surface of Washi Lake in an area that is shown by Thurston, Carter and Riley (1972) as being composed largely of mafic to intermediate metavolcanic rocks.

Although limited information is available from the assessment file (AFRI# 42M06NE0001) for this occurrence, highly sheared rocks were reported. Given that the stratigraphy and foliation in the area strikes approximately 075°, it is probable that the mineralized shear shares this orientation. A parallel fold axis was also indicated by Thurston, Carter and Riley (1972) to be present in this area.

Relatively low values of base metal mineralization were encountered at this location, with the most notable reported assays being 173 ppm Zn and 94 ppm Cu (AFRI# 42M06NE0001). However, drill-hole logs indicate that the drill target was a relatively wide shear zone (>25 m in drill hole W-69-2) containing significant sulphide mineralization (pyrite and pyrrhotite).

## GSC MAP 56-1963 COPPER OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 461299E 5676238N<br>[occurrence 87 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/4 (NE) |
| *MNDM Township Area*: | Struk Lake Area |
| *Commodities*: | Cu |
| *Status*: | Discretionary Occurrence |
| *Deposit Type:* | Unknown |
| *MDI Reference Number*: | MDI000000000111 |
| *Subprovince/Belt/Assemblage*: | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

This occurrence is located in the vicinity of a thin unit of northwesterly striking mafic to intermediate metavolcanic rocks that was indicated by Thurston, Carter and Riley (1972) to be bounded by metasedimentary rocks to the southwest and intrusive rock to the northeast. Earlier mapping by Thurston, Carter and Riley (1969) indicated considerable variability in foliation orientations.

This record is based on a reported occurrence of 2700 ppm (0.27%) Cu in a sample collected by the Geological Survey of Canada during a bedrock geochemical survey that was carried out in 1960–1961 (Jackson and Holman 1963). No information is available regarding the characteristics of the material that was sampled. However, a grab sample was collected near this location by Asarco Exploration (Thunder Bay Resident Geologist's office, mineral deposit file 42M06NE–Asarco Exploration Company of Canada Limited) in the late 1960s. This sampled material was described as being collected from a narrow shear zone containing 1 to 2 feet of massive banded pyrrhotite and minor chalcopyrite in a host rock described as amphibolite-andesite. A white quartz vein that crosscut the pyrrhotite was also documented. The Asarco sample was reported to contain 0.02% Cu and 0.01% Ni.

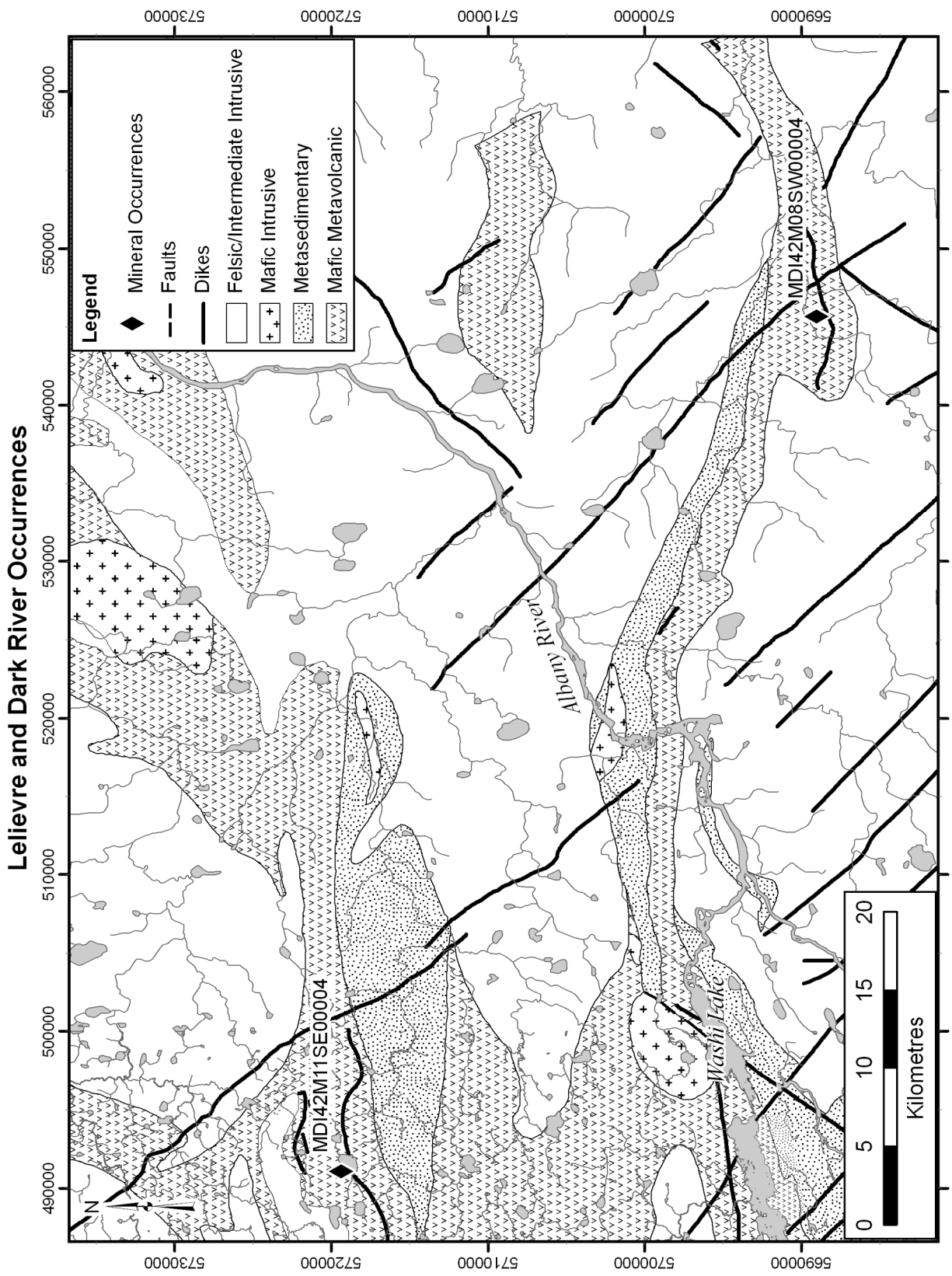
## SCHIST LAKE OCCURRENCE

| | |
|---|---|
| *Location:* | UTM Zone 16, 459253E 5688825N<br>[occurrence 86 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet*: | 42 M/5 (SE) |
| *MNDM Township Area*: | Schist Lake Area |
| *Commodities*: | Au |
| *Status*: | Occurrence |
| *Deposit Type:* | Lode Gold |
| *MDI Reference Number*: | MDI42M05SE00002 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt /<br>Unnamed metasedimentary assemblage |

Thurston, Carter and Riley (1972) indicated that the Schist Lake occurrence is located near the contact between metasedimentary rocks mapped as arkose or greywacke and a felsic intrusion. Logs of diamond-drill holes advanced by the Hoey Syndicate (AFRI# 42M05SE0003) in 1964 indicate that the local rock types included felsic intrusive rock described as porphyry, porphyritic granite and aplite, and andesite. A site plan included with the drill-hole logs indicates that the drill target was a northwest-striking shear zone.

Mineralization reported in the drill-hole logs includes quartz stringers and veins with disseminated sulphides including pyrite, chalcopyrite and pyrrhotite. Shearing and carbonate alteration were also noted on some borehole logs.

The best assay result reported from this showing was 0.51 ounces gold per ton over 20 inches (Mason and White 1995).




NTS 42 M: Lelievre and Dark River occurrence areas

# LELIEVRE AND DARK RIVER OCCURRENCES AREAS

## DARK RIVER IRON OCCURRENCE

***Access***: Access via air from Nakina

***Exploration History***: *1961*: Airborne magnetometer survey carried out for Pickands Mather and Co. and Mattagami Mining Company Ltd. identifies a significant anomaly in the Dark River area. *1962*: 16 mining claims were staked over the anomaly and a ground magnetometer survey was carried out. This program delineated 3 approximately parallel east-trending magnetic anomalies. *1963*: A diamond-drilling program consisting of 2 drill holes was carried out to test the geophysical anomaly.

| | |
|---|---|
| *Location:* | UTM Zone 16, 545663E 5689023N<br>[occurrence 91 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet:* | 42 M/08 (SW) |
| *MNDM Township Area:* | East of Dusey River Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI42M08SW00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

### General Geology

No outcrop is present in the area. Therefore, interpretations are based solely upon diamond-drill hole and geophysical information collected by Pickands Mather and Mattagami Mining. The geophysical anomalies were interpreted by Harris (1962) as being indicative of a steeply dipping, folded formation, with the fold closure near the eastern end of the property. The diamond-drill hole logs indicate that the rocks at this location are dominated by metasedimentary rocks described as quartz-biotite schist, quartz-biotite-sericite schist, quartz-biotite-amphibole schist, impure quartzite and banded quartz-magnetite iron formation. Garnets are frequently reported in drill logs, indicating that the rocks at this location have been metamorphosed to amphibolite grade. Narrow felsic dikes were also reported in drill-hole logs.

### Structural Geology

Airborne magnetic data suggests the presence of a folded iron formation with an east-trending axial plane. Stratigraphy at this location is interpreted to strike approximately east with near-vertical dip. Drill-hole logs for borehole DR-1 document a significant fracture zone at the upper (northern) contact between the quartzite and iron formation. The fracture zone was reported to be serpentinized with some disseminated pyrite. A chloritic fracture zone was also noted within the iron formation sequence in drill hole DR-2. Adjacent to this zone, blocky, broken iron formation containing pyrite and green iron silicate was also reported.

### Deposit Geology

A maximum thickness of approximately 200 feet (60 m) of quartz-magnetite iron formation was reported in the southern band (Shklanka 1968). The presence of disseminated pyrite was commonly noted in the iron formation.

## LELIEVRE (GOFF LAKE) IRON OCCURRENCE

***Access***: Air access from Nakina, Armstrong or Pickle Lake.

***Exploration History***: *1961*: Ground magnetometer survey and diamond drilling for Lelievre iron prospect.

| | |
|---|---|
| *Location:* | UTM Zone 16, 491070E 5719377N<br>[occurrence 90 on map NTS 42 M (back pocket)] |
| *NTS Map Sheet:* | 42 M/11 (NE) |
| *MNDM Township Area:* | Crump Lake Area |
| *Commodities:* | Fe |
| *Status:* | Occurrence |
| *Deposit Type:* | Algoma-type Iron Formation |
| *MDI Reference Number:* | MDI42M11SE00004 |
| *Subprovince/Belt/Assemblage:* | Uchi / Miminiska–Fort Hope greenstone belt / St. Joseph assemblage |

### General Geology

The Lelievre occurrence is located in an area of limited bedrock exposure, where the iron formation was identified through the interpretation of airborne magnetometer surveys (Ontario Department of Mines 1960). Thurston, Carter and Riley (1972) identified this iron formation as occurring within a sequence dominated by mafic to intermediate volcanic rocks. This interpretation is consistent with the diamond-drill hole data that record intercalated layers of iron formation with greenstone and gabbro.

### Structural Geology

The ground magnetometer survey map for this occurrence indicates that the iron formation trends in an approximately northeast to southwest orientation at this location. Evidence of the presence of mineralized structures crosscutting the iron formation is also provided in the drill log.

### Deposit Geology

The iron deposit consists of approximately 230 feet (70 m) of banded magnetite-quartz iron formation (Shklanka 1968). Interesting observations made in the single recorded diamond-drill hole log (AFRI# 42M11NE0003) include the reported presence of quartz veins that contain carbonate, tourmaline and/or pyrite. Another notable observation was the reported presence of assimilated iron formation in gabbro intrusions. This suggests that the area may have some potential for Cu-Ni-PGE mineralization similar to that known to occur elsewhere within the Fort Hope–Miminiska greenstone belt at Norton Lake.

# Acknowledgments

The release of this publication would not have been possible without the assistance of a large number of Ontario Geological Survey staff. Some of those who made the most valuable contributions included John Mason and Mark Smyk who shared their geological knowledge of the study area, and who each reviewed and suggested improvements to portions of the manuscript. Greg Stott, Precambrian Geoscience Section, also shared geological information that helped the author to understand the tectonic history and metallogeny of the study area. Jack Parker (Senior Manager, Precambrian Geoscience Section) also provided time to allow Julie Chartrand and Sara Jane McIlraith to assist in the preparation of the final versions of the report figures and maps, respectively. Alphons Evers and Monica Gaiswinkler Easton, Publication Services Section, completed the maps and performed the final manuscript edits, respectively.

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# Metric Conversion Table

| Conversion from SI to Imperial | | | Conversion from Imperial to SI | | |
|---|---|---|---|---|---|
| *SI Unit* | *Multiplied by* | *Gives* | *Imperial Unit* | *Multiplied by* | *Gives* |
| | | LENGTH | | | |
| 1 mm | 0.039 37 | inches | 1 inch | **25.4** | mm |
| 1 cm | 0.393 70 | inches | 1 inch | **2.54** | cm |
| 1 m | 3.280 84 | feet | 1 foot | **0.304 8** | m |
| 1 m | 0.049 709 | chains | 1 chain | 20.116 8 | m |
| 1 km | 0.621 371 | miles (statute) | 1 mile (statute) | **1.609 344** | km |
| | | AREA | | | |
| 1 $cm^2$ | 0.155 0 | square inches | 1 square inch | **6.451 6** | $cm^2$ |
| 1 $m^2$ | 10.763 9 | square feet | 1 square foot | **0.092 903 04** | $m^2$ |
| 1 $km^2$ | 0.386 10 | square miles | 1 square mile | 2.589 988 | $km^2$ |
| 1 ha | 2.471 054 | acres | 1 acre | 0.404 685 6 | ha |
| | | VOLUME | | | |
| 1 $cm^3$ | 0.061 023 | cubic inches | 1 cubic inch | **16.387 064** | $cm^3$ |
| 1 $m^3$ | 35.314 7 | cubic feet | 1 cubic foot | 0.028 316 85 | $m^3$ |
| 1 $m^3$ | 1.307 951 | cubic yards | 1 cubic yard | 0.764 554 86 | $m^3$ |
| | | CAPACITY | | | |
| 1 L | 1.759 755 | pints | 1 pint | 0.568 261 | L |
| 1 L | 0.879 877 | quarts | 1 quart | 1.136 522 | L |
| 1 L | 0.219 969 | gallons | 1 gallon | **4.546 090** | L |
| | | MASS | | | |
| 1 g | 0.035 273 962 | ounces (avdp) | 1 ounce (avdp) | 28.349 523 | g |
| 1 g | 0.032 150 747 | ounces (troy) | 1 ounce (troy) | **31.103 476 8** | g |
| 1 kg | 2.204 622 6 | pounds (avdp) | 1 pound (avdp) | **0.453 592 37** | kg |
| 1 kg | 0.001 102 3 | tons (short) | 1 ton (short) | **907.184 74** | kg |
| 1 t | 1.102 311 3 | tons (short) | 1 ton (short) | **0.907 184 74** | t |
| 1 kg | 0.000 984 21 | tons (long) | 1 ton (long) | **1016.046 908 8** | kg |
| 1 t | 0.984 206 5 | tons (long) | 1 ton (long) | **1.016 046 90** | t |
| | | CONCENTRATION | | | |
| 1 g/t | 0.029 166 6 | ounce (troy)/ ton (short) | 1 ounce (troy)/ ton (short) | 34.285 714 2 | g/t |
| 1 g/t | 0.583 333 33 | pennyweights/ ton (short) | 1 pennyweight/ ton (short) | 1.714 285 7 | g/t |

OTHER USEFUL CONVERSION FACTORS

| | *Multiplied by* | |
|---|---|---|
| 1 ounce (troy) per ton (short) | 31.103 477 | grams per ton (short) |
| 1 gram per ton (short) | 0.032 151 | ounces (troy) per ton (short) |
| 1 ounce (troy) per ton (short) | 20.0 | pennyweights per ton (short) |
| 1 pennyweight per ton (short) | 0.05 | ounces (troy) per ton (short) |

*Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.*

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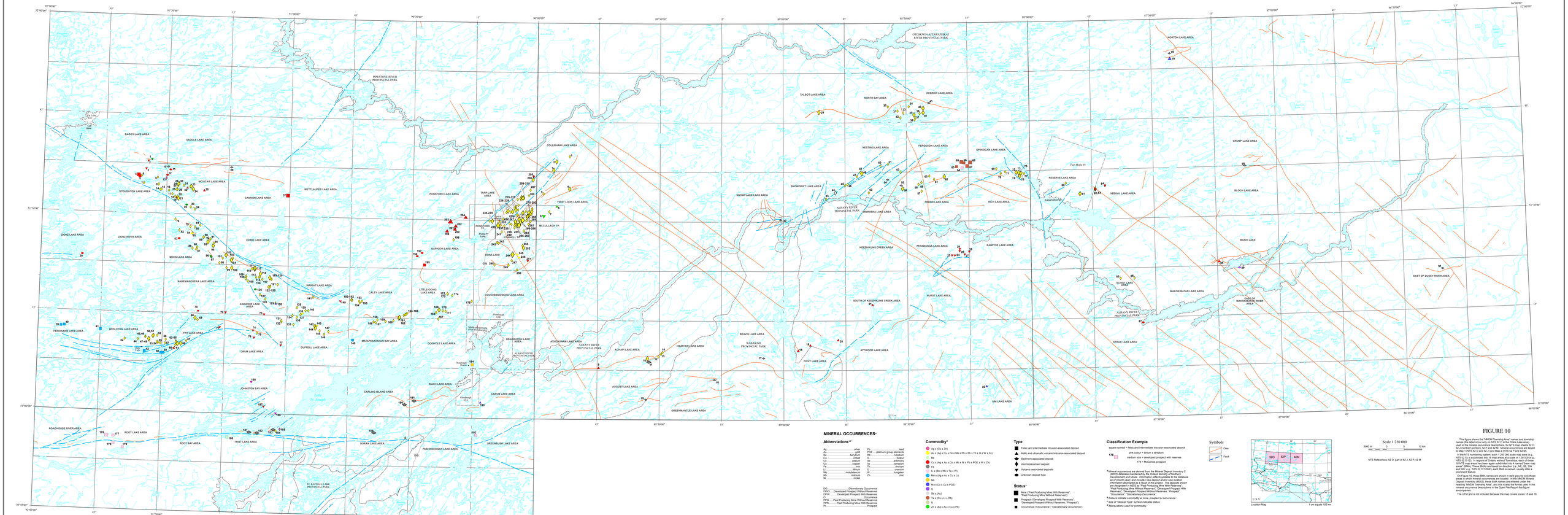



## MINERAL OCCURRENCES*

### Abbreviations**

| | |
|---|---|
| Ag | silver |
| Au | gold |
| Be | beryllium |
| Co | cobalt |
| Cs | cesium |
| Cu | copper |
| Fe | iron |
| Li | lithium |
| Mo | molybdenum |
| Na | sodium |
| Ni | nickel |
| Pb | lead |
| PGE | platinum group elements |
| Sb | antimony |
| Si | Sulfur |
| Sb | antimony |
| Ta | tantalum |
| Th | thorium |
| U | uranium |
| W | tungsten |
| Zn | zinc |

DO.....Discretionary Occurrence
DPKO.....Developed Prospect Without Reserves
DPRR.....Developed Prospect With Reserves
O.....Occurrence
PPKO.....Past Producing Mine Without Reserves
PPRR.....Past Producing Mine With Reserves
Pr.....Prospect

### Commodity*

- Ag ± (Cu ± (N)
- Au ± (Ag ± Cu ± Fe ± Mo ± Pb ± Sb ± Th ± U ± W ± Zn)
- Be
- Cs ± (Ag ± Au ± Co ± Mo ± Ni ± Pb ± POE ± W ± Zn)
- Fe
- Li ± (Be ± Nb ± Ta ± W)
- Mo ± (Ag ± Au ± Cu ± Li)
- Nb
- Ni ± (Co ± Cu ± POE)
- Pb
- Sb ± (Au)
- Ta ± (Cs ± Li ± Rb)
- U
- Zn ± (Ag ± Au ± Cu ± Pb)

### Type

- Felsic and intermediate intrusion-associated deposit
- Mafic and ultramafic volcanic/intrusion-associated deposit
- Sediment-associated deposit
- Vein/replacement deposit
- Volcanic-associated deposits
- Unknown deposit type

### Status*

- Mine ("Past Producing Mine With Reserves", "Past Producing Mine Without Reserves")
- Prospect ("Developed Prospect With Reserves", "Developed Prospect Without Reserves, "Prospect")
- Occurrence ("Occurrence", "Discretionary Occurrence")

### Classification Example

square symbol = felsic and intermediate intrusion-associated deposit

pink colour = lithium ± tantalum

medium size = developed prospect with reserves

176 = McCombe prospect

* Mineral occurrences are derived from the *Mineral Deposit Inventory 2* (MDI2) database maintained by the Ontario Ministry of Northern Development and Mines. Information reflects updates to the database as of December 2011. Some occurrences may have been updated with information developed as a result of this project. The deposits shown are designated in MDI2 as "Past Producing Mine With Reserves", "Past Producing Mine Without Reserves", "Developed Prospect With Reserves", "Developed Prospect Without Reserves", "Prospect", "Occurrence", "Discretionary Occurrence".

* Colours indicate commodity at mine, prospect or occurrence

* Size of "Deposit Type" symbol indicates status

* Abbreviations used for commodity

### Symbols

- Dike
- Fault

Location Map

Scale 1:250 000

5000 m 0 5 10 km

NTS Reference: 52 O, part of 52 J, 52 P, 42 M

FIGURE 10

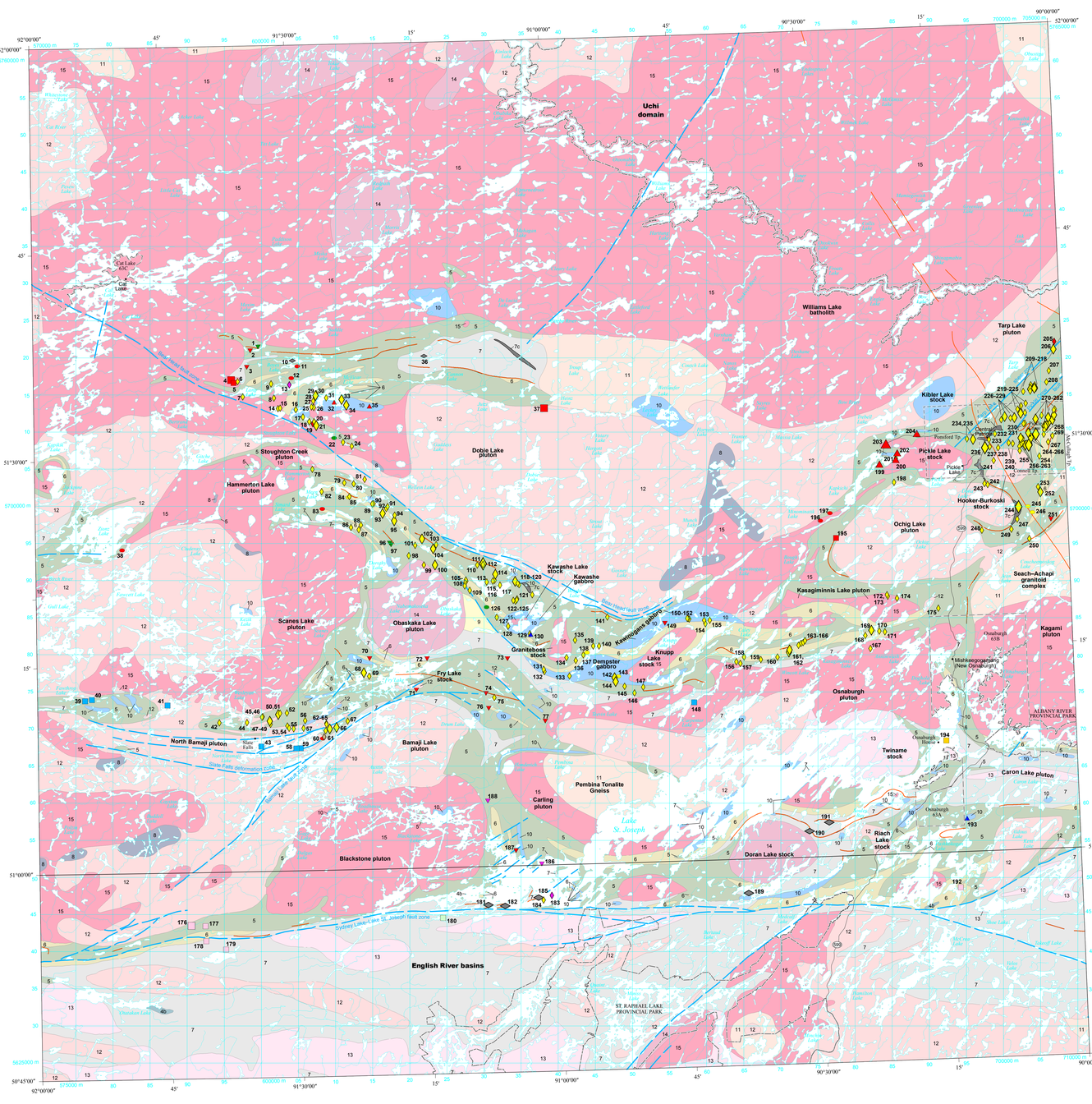
This figure shows the "MNDM Township Area" names and township names (the latter occur only on NTS 52 O in the Pickle Lake area). Mineral occurrences are shown on NTS 52 O (Pickle Lake area), 52 J (northern portion), 52 P and 42 M. Mineral occurrences are keyed to Map 1 (NTS 52 O and 52 J) and Map 2 (NTS 52 P and 42 M).

The grid is based on the Universal Transverse Mercator (UTM) system (e.g., NTS 52 O) is subdivided into 16 map areas at a scale of 1:100 000 (e.g., NTS 52 O/12). In regions of Ontario without Townships, each of these 1:100 000 map areas is subdivided into 100 numbered "MNDM Township areas" (5000). These 5MAs are based on direction (i.e., NE, SE, SW and NW; e.g., NTS 52 O/12SW); each 5MA is named, usually after a prominent lake.

On Figure 10, these 5MA names are shown in dark grey for only those areas in which mineral occurrences are located. In the MNDM Mineral Deposit Inventory (MDI) database, mineral occurrences are listed by heading "MNDM Township Area", and this is also the format used in the mineral occurrence descriptions in the Open File Report this figure accompanies.

The UTM grid is not included because the map covers zones 15 and 16.

Accompanies OFR 6228




## MINERAL OCCURRENCES[a]

| DEP # | MDI NUMBER | DEPOSIT NAME | STATUS | COMMODITY |
|---|---|---|---|---|
| **Lake St. Joseph Area NTS 52 O** | | | | |
| | **Lang Lake Greenstone Belt** | | | |
| | **Lang Lake Area** | | | |
| 1 | MDI52O12NE00006 | Saddle Lake | O | Zn, Cu, Pb, Ag |
| 2 | MDI52O12NE00007 | Saddle Creek | O | Cu, Zn |
| 3 | MDI52O12SE00013 | Castlebar #3 (Stoughton Lake #1) | O | Cu, Zn |
| 4 | MDI52O12SE00012 | Lang Lake | DPrR | Cu, Mo, Ag, Au |
| 5 | MDI52O12SE00014 | Stoughton Lake #2 | O | Cu, Au |
| 6 | MDI52O12SE00005 | Stoughton Lake #4 (AO1) | O | Au |
| 7 | MDI0000000002385 | AO03 | O | Au |
| 8 | MDI0000000000288 | Sample 0134 | O | Au |
| 9 | MDI0000000000287 | Sample 2056 | O | Au |
| | **McVicar Lake Area** | | | |
| 10 | MDI52O11SW00002 | Boyes Lake | DO | Fe |
| 11 | MDI52O11SW00008 | Boyes Lake South | O | Cu |
| 12 | MDI52O11SW00035 | Lang Lake–Belore | O | Cu, Au |
| 13 | MDI0000000000286 | Sample 2211 | O | Ag, Pb |
| 14 | MDI0000000000273 | Jay Zone | O | Au |
| 15 | MDI52O12SE00006 | Sor Lake Sill | O | Au |
| 16 | MDI52O11SW00013 | Sor Lake Sill Shear (McVicar Lake #10) | O | Au |
| 17 | MDI0000000000275 | AGM Zone | O | Au |
| 18 | MDI0000000000276 | Quartz-Pyrite Vein | O | Au, Cu |
| 19 | MDI0000000000277 | McVicar Lake Cu | O | Cu |
| 20 | MDI0000000000278 | AGM Island | O | Au, Cu |
| 21 | MDI52O11SW00004 | Chetlow Vein / Cliff Zone (McVicar Lake #7) | Pr | Au |
| 22 | MDI52O11SW00036 | McVicar Lake # 4 | O | Zn |
| 23 | MDI52O11SW00003 | Dougie Lake West | O | Au |
| 24 | MDI52O11SW00006 | Dougie Lake East | O | Au |
| 25 | MDI52O11SW00014 | Showing #8 (McVicar Lake #11) | O | Au |
| 26 | MDI0000000002279 | Point Showing | O | Au |
| 27 | MDI0000000000282 | Shonia Lake Narrows | O | Au |
| 28 | MDI0000000000281 | South Shonia | O | Au |
| 29 | MDI52O11SW00007 | Shonia #1 | Pr | Au |
| 30 | MDI0000000000280 | Shonia #6 | O | Au |
| 31 | MDI0000000000283 | Apple Island Zone | O | Au |
| 32 | MDI52O11SW00037 | Hoey Syndicate (McVicar Lake #5) | O | Cu, Ni, PGE |
| 33 | MDI0000000000284 | North Flexure Zone | Pr | Au |
| 34 | MDI52O11SW00012 | Altered Zone | Pr | Au |
| 35 | MDI52O11SW00031 | McVicar Lake East | O | Cu, Ni, PGE |
| | **Card Lake–Wettlaufer Lake Area** | | | |
| 36 | MDI52O11SE00005 | Card Lake | O | Fe |
| 37 | MDI52O11SE00007 | Wettlaufer Lake | Pr | Cu, Ni, Au, Mo, Ag |
| **Birch–Uchi Greenstone Belt** | | | | |
| | **Zonz Lake Area** | | | |
| 38 | MDI52O05NW00002 | Fort Reliance | DO | Cu |
| | **Fawthrop Lake–Senior Lake Area** | | | |
| 39 | MDI52O04NW00006 | Fawthrop (Ferdinand) Lake # 2 | O | Mo, Cu |
| 40 | MDI52O04NW00007 | Fawthrop (Ferdinand) Lake | O | Mo, Li |
| 41 | MDI52O04NE00022 | Senior Lake | O | Mo |
| **Mesn–Dempster Greenstone Belt** | | | | |
| | **Bamaji Lake–Fry Lake Area** | | | |
| 42 | MDI52O04NE00004 | Trey | O | Au |
| 43 | MDI52O04NE00018 | Island–North Bamaji Lake | O | Mo |
| 44 | MDI0000000000226 | J. Loon Zone | O | Au, Ag |
| 45 | MDI0000000000228 | L1 Zone | O | Au, Ag, Cu, Zn, Sb |
| 46 | MDI0000000000227 | Carpenter Zone | O | Au, Ag |
| 47 | MDI52O04NE00024 | Trail Zone | Pr | Au, Ag, Cu, Zn, Pb |
| 48 | MDI52O04NE00023 | Path Zone | O | Au, Ag, Cu, Pb |
| 49 | MDI0000000000238 | Sample 23055 | O | Au |
| 50 | MDI52O04NE00019 | Sanderson Zone | Pr | Au, Ag, Cu, Zn, Pb |
| 51 | MDI52O04NE00025 | L15 Zone (Wesleyan Lake #5) | O | Au, Ag, Cu, Pb, Sb, Zn |
| 52 | MDI0000000000229 | Fly | O | Au |
| 53 | MDI0000000000230 | Corner | O | Au, Ag, Cu, Zn |
| 54 | MDI0000000000239 | Sample 23066 | O | Au |
| 55 | MDI0000000000237 | BAD-02 | O | Au |
| 56 | MDI52O03NW00035 | FTM Zone | O | Au, Ag |
| 57 | MDI0000000000231 | Hydroline | O | Au, Ag |
| 58 | MDI52O04NE00021 | Loon | O | Mo, Cu, Au, Ag |
| 59 | MDI52O03NW00030 | Fry Lake # 1 | O | Mo, Cu |
| 60 | MDI52O03NW00028 | Knappett, R. | O | Cu, Ag |
| 61 | MDI52O03NW00034 | Fry Lake # 6 | O | U |
| 62 | MDI52O03NW00032 | Fry Lake # 4 | O | Au, Ag |
| 63 | MDI52O03NW00031 | Kirkland Townsite Showing #2 | Pr | Au, Ag, Zn, U |
| 64 | MDI0000000000240 | Sample 23111 | O | Au |
| 65 | MDI52O03NW00033 | Fry Lake # 5 | O | Au, U |
| 66 | MDI52O03NW00029 | Kirkland Townsite Showing #1 | Pr | Au, U, Th |
| 67 | MDI52O03NW00013 | Fry Lake # 10 | O | Au |
| 68 | MDI52O03NW00003 | Flicka | Pr | Au |
| 69 | MDI52O03NW00012 | Fry Lake # 9 | O | Au |
| 70 | MDI52O06SW00001 | Group 42 | DO | Cu, Zn |
| 71 | MDI52O03NW00026 | Selco–Fry Lake | O | Cu, Zn |
| 72 | MDI52O06SE00007 | Kawashe Lake # 2 | O | Cu, Zn |
| 73 | MDI52O06SE00008 | Kawashe Lake # 3 | O | Cu, Zn |
| 74 | MDI52O03NW00003 | Firth, N. | DO | Cu, Zn |
| 75 | MDI52O03NE00007 | McVean Lake | O | Au |
| 76 | MDI52O03NE00004 | Selco–Drum Lake | O | Cu, Zn, Ag |
| 77 | MDI52O03NE00002 | Cochenour Willans–Selco | DO | Cu |
| | **Meen Lake–Dempster Lake Area** | | | |
| 78 | MDI52O06NW00020 | Meen Lake #17 | O | Au |
| 79 | MDI52O06NW00002 | Jorsco | O | Au |
| 80 | MDI52O06NW00011 | Meen Lake #9 | O | Au |
| 81 | MDI52O06NW00019 | Meen Lake #16 | O | Au |
| 82 | MDI52O06NW00016 | Meen Lake #13 | O | Au |
| 83 | MDI52O06NW00063 | Meen Lake #14 | O | Cu |
| 84 | MDI52O06NW00058 | Meen Lake #6 | O | Au |
| 85 | MDI52O06NW00009 | Meen Lake #7 | O | Au |
| 86 | MDI52O06NW00021 | Meen Lake #18 | O | Au |
| 87 | MDI52O06NW00023 | Meen Lake #20 | O | Au |
| 88 | MDI52O06NW00022 | Meen Lake #19 | O | Au |
| 89 | MDI52O06NW00012 | Meen Lake #10 | O | Au |
| 90 | MDI52O06NW00005 | Koromond # 1 | O | Au |
| 91 | MDI52O06NW00014 | Meen Lake #12 | O | Au |
| 92 | MDI52O06NW00013 | Meen Lake #11 | O | Au |
| 93 | MDI52O06NW00015 | Cooper Zones | Pr | Au |
| 94 | MDI52O06NW00018 | Meen Lake #15 | O | Au |
| 95 | MDI52O06NW00003 | Umex–Dorothy Lake | DPrR | Au |
| 96 | MDI52O06NW00053 | Meen Lake #5 | O | Zn |
| 97 | MDI52O06NW00052 | Meen Lake #4 | O | Zn |
| 98 | MDI52O06NW00004 | Meen Lake #2 | O | Au |
| 99 | MDI52O06SE00024 | Kawashe Lake #19 | DO | Au |
| 100 | MDI52O06NE00004 | Debie Zone | DPrR | Au |
| 101 | MDI52O06NW00010 | Meen Lake #8 | O | Au |
| 102 | MDI52O06NW00024 | Tonsil Lake | Pr | Au |
| 103 | MDI52O06NE00002 | Debie Lake # 1 | O | Au |
| 104 | MDI52O06NE00003 | Spike Zone | Pr | Au |
| 105 | MDI52O06SE00018 | Kawashe Lake #13 | O | Au |
| 106 | MDI52O06SE00019 | Kawashe Lake #14 | O | Au |
| 107 | MDI52O06SE00020 | Kawashe Lake #15 | O | Au |
| 108 | MDI52O06SE00021 | Kawashe Lake #16 | O | Au |
| 109 | MDI52O06SE00022 | Kawashe Lake #17 | O | Au |
| 110 | MDI52O06SE00003 | Muskegsagagen Lake West | O | Au |
| 111 | MDI52O06SE00005 | Golden Patricia Mine | PPO | Au |
| 112 | MDI52O06SE00031 | B-Zone | O | Au |
| 113 | MDI52O06SE00011 | Kawashe Lake #6 | O | Au |
| 114 | MDI52O06SE00026, MDI52O06SE00084 | Powerline Zone | Pr | Au |
| 115 | MDI52O06SE00014 | Kawashe Lake #9 | O | Au |
| 116 | MDI52O06SE00010 | Kawashe Lake #5 | O | Au |
| 117 | MDI52O06SE00009 | Kawashe Lake #4 | O | Au |
| 118 | MDI52O06SE00027 | Esker Zone | Pr | Au |
| 119 | MDI52O06SE00030 | Kawashe Lake #25 | O | Au |
| 120 | MDI52O06SE00029 | Kawashe Lake #24 | O | Au |
| 121 | MDI52O06SE00013 | Kawashe Lake #8 | O | Au |
| 122 | MDI52O06SE00015 | Kawashe Lake #10 | O | Au |
| 123 | MDI52O06SE00012 | Kawashe Lake #7 | O | Au |
| 124 | MDI52O06SE00016 | Kawashe Lake #11 | O | Au |
| 125 | MDI52O06SE00017 | Kawashe Lake #12 | O | Au |
| 126 | MDI52O06SE00083 | Kawashe Lake #18 | DO | Zn |
| 127 | MDI52O06SE00028 | Kawashe Lake #21 | O | Au |
| 128 | MDI52O06SE00025 | Kawashe Lake #20 | O | Au |
| 129 | MDI52O06SE00062 | Jackrifle Lake North | DO | Ni, Cu |
| 130 | MDI52O06SE00006 | Jackrifle Lake | DO | Au, Fe |
| 131 | MDI52O03NE00006 | Drum Lake # 2 | O | Au |
| 132 | MDI52O03NE00005 | South Dunlop Lake | O | Au |
| 133 | MDI52O02NW00002 | Dempster Southwest | O | Au |
| 134 | MDI52O07SW00021 | Mousetrap Lake | O | Au, Ag |
| 135 | MDI52O07SW00019 | Perkins Pond | O | Au, Cu, Zn |
| 136 | MDI52O02NW00007 | Duffell Lake #6 | O | Au |
| 137 | MDI52O07SW00003 | Beardrum Lake | O | Au |
| 138 | MDI52O07SW00022 | Wright Lake #5 | DO | Au |
| 139 | MDI52O07SW00008 | Sudbury Point | O | Au |
| 140 | MDI52O07SW00006 | North Dempster Lake | O | Au |
| 141 | MDI52O07SW00004 | Wright Lake #4 | O | Au |
| 142 | MDI52O02NW00005 | Bazinet (Duffell Lake #3) | Pr | Au |
| 143 | MDI52O02NW00003 | Duffell Lake #1 | DO | Au |
| 144 | MDI52O02NW00006 | Anomaly A (Duffell Lake #4) | Pr | Au |
| 145 | MDI0000000000330 | Anomaly B | O | Au |
| 146 | MDI52O02NW00004 | Bazinet #5 (Duffell Lake #2) | O | Au |
| 147 | MDI0000000000331 | Anomaly T | O | Au |
| 148 | MDI52O02NE00002 | Carpenter Lake | DO | Mo |
| 149 | MDI52O07SW00016 | Kawinogans Lake | O | Cu, Zn |
| 150 | MDI52O07SE00007 | Caley Lake # 6 | O | Au |
| 151 | MDI52O07SE00008 | Caley Lake # 7 | O | Au |
| 152 | MDI52O07SE00012 | Caley Lake # 11 | O | Au |
| 153 | MDI52O07SE00011 | Caley Lake # 10 | O | Au |
| 154 | MDI52O07SE00009 | Caley Lake # 8 | O | Au |
| 155 | MDI52O07SE00010 | Caley Lake # 9 | O | Au |
| 156 | MDI52O02NE00007 | Matapeskatikun Bay #5 | O | Au |
| 157 | MDI52O02NE00008 | Matapeskatikun Bay #6 | O | Au |
| 158 | MDI52O02NE00004 | Matapeskatikun Bay #2 | O | Au |
| 159 | MDI52O02NE00005 | Matapeskatikun Bay #3 | O | Au |
| 160 | MDI52O02NE00003 | Matapeskatikun Bay #1 | O | Au |
| 161 | MDI0000000000206 | Hasaga C | DPrR | Au |
| 162 | MDI52O07SE00002 | Koval–Ohman | DPrR | Au |
| 163 | MDI52O07SE00005 | Ben Lake Property, Zone #3 | O | Au |
| 164 | MDI52O07SE00003 | Ben Lake Property, Zone #1 | O | Au |
| 165 | MDI52O07SE00004 | Ben Lake Property, Zone #2 | O | Au |
| 166 | MDI52O07SE00006 | Ben Lake Property, Zone #7 | O | Au |
| 167 | MDI52O08SW00008 | Little Ochig Lake #7 | O | Au |
| 168 | MDI52O08SW00002 | Little Ochig Lake #1 | O | Au |
| 169 | MDI52O08SE00007 | Kasagiminnis Lake | DPrR | Au |
| 170 | MDI52O08SW00010 | Little Ochig Lake #9 | O | Au |
| 171 | MDI52O08SW00009 | Little Ochig Lake #8 | O | Au |
| 172 | MDI52O08SW00004 | Little Ochig Lake #3 | O | Au |
| 173 | MDI52O08SW00005 | Little Ochig Lake #4 | O | Au |
| 174 | MDI52O08SW00003 | Little Ochig Lake #2 | O | Au |
| 175 | MDI52O08SW00006 | Little Ochig Lake #5 | O | Au |
| **Lake St. Joseph Area NTS 52 O and Sioux Lookout Area NTS 52 J** | | | | |
| | **Lake St. Joseph Greenstone Belt** | | | |
| | **Western Lake St. Joseph Area** | | | |
| 176 | MDI52J13NE00004 | McCombe | DPrR | Li, Ta, Be, Nb |
| 177 | MDI52J13NE00005 | Consolidated Morrison | O | Li, Ta, Be, Nb |
| 178 | MDI52J13NE00006 | Capital Lithium Mines 5 Claim Group | O | Li, Ta, Be, Nb |
| 179 | MDI52J13NE00007 | Capital Lithium Mines 345 Claim Group | O | Li, Ta, Be, Nb |
| 180 | MDI52J14NE00006 | Lake St. Joseph | O | Be |
| 181 | MDI52J14NE00008 | Wolf (175) Island | DPrR | Fe |
| 182 | MDI52J14NE00007 | Fish (164) Island | DPrR | Fe |
| 183 | MDI52J14NE00004 | Eagle (84) Island | DPrR | Fe |
| 184 | MDI52J14NE00009 | Island 17 | O | Au, Ag |
| 185 | MDI52J14NE00005 | Island 34 | O | Ag |
| 186 | MDI52O03SE00010 | Island 81 | O | Ag |
| 187 | MDI52O03SE00002 | Mile Five | DO | Cu, Zn |
| 188 | MDI52O01SE00003 | Kitty Creek | O | Ag, Cu, Zn |
| | **Soules Bay–Pashkokogan Lake Area** | | | |
| 189 | MDI52J15NE00004 | Belcher–Doran | DPrR | Fe |
| 190 | MDI0000000000332 | Lake St. Joseph South Zone | DPrR | Fe |
| 191 | MDI52O01SW00003 | Lake St. Joseph North Zone | DPrR | Fe |
| 192 | MDI52J16NE00003 | East Pashkokogan Lake | O | Li, Ta, Be, Nb |
| 193 | MDI0000000000421 | Pashkokogan River | O | Ni, Cu |
| 194 | MDI0000000000333 | East Lake St. Joseph Pegmatite | O | Nb |
| **Lake St. Joseph Area NTS 52 O** | | | | |
| | **Pickle Lake Greenstone Belt** | | | |
| | **Sam's Lake Area** | | | |
| 195 | MDI52O08NW00012 | Transterre | DO | Cu, Mo |
| 196 | MDI0000000000232 | JKP89-05 | O | Cu, Ni |
| 197 | MDI0000000000233 | JKP89-09 | O | Cu |
| | **Kapkichi Lake Area** | | | |
| 198 | MDI0000000000235 | Wimbabika Lake (WL88-05) | O | Au |
| 199 | MDI52O08NW00014 | Umex G (Kapkichi Lake B) | DPrR | Cu, Ni |
| 200 | MDI52O08NW00015 | Kapkichi Central Patricia | Pr | Cu, Ni |
| 201 | MDI0000000000234 | Gunnar Berg | O | Au, Cu |
| 202 | MDI52O08NW00016 | Umex J&I (Umex Kapkichi) | DPrR | Cu, Ni |
| 203 | MDI52O08NW00003 | Thierry Mine | PPR | Cu, Ni, PGE |
| 204 | MDI52O08SW00004 | Umex K1-1 | DPrR | Cu, Ni |
| | **Tarp Lake Area** | | | |
| 205 | MDI0000000000183 | TL-26 | O | Cu |
| 206 | MDI0000000000182 | Tarp Lake East Zone and West Pr Zone | Pr | Au |
| 207 | MDI52O09SE00026 | TL-7 Zone | O | Au |
| 208 | MDI52O09SE00024 | TL-4 Zone | O | Au |
| 209 | MDI0000000000185 | Jessie Vein | O | Au |
| 210 | MDI0000000000184 | L22E | O | Au |
| 211 | MDI0000000000186 | 7 Zone | O | Au |
| 212 | MDI0000000000190 | PP91-01 | O | Au |
| 213 | MDI0000000000187 | Abyss Zone | O | Au |
| 214 | MDI0000000000188 | Metcalfe East | O | Au |
| 215 | MDI52O09SE00008, MDI52O09SE00011 | Metcalfe | Pr | Au |
| 216 | MDI0000000000189 | Carbonate Zone | Pr | Au |
| 217 | MDI0000000000191 | Spring Zone | O | Au |
| 218 | MDI0000000000192 | West Vein | O | Au |
| 219 | MDI52O09SE00023 | CB-10 (77-1) | O | Au |
| 220 | MDI0000000000194 | Jigger | O | Au |
| 221 | MDI0000000000198 | Best One Zone | O | Au |
| 222 | MDI0000000000195 | Triple X | O | Au |
| 223 | MDI0000000000193 | 77-2 | O | Au |
| 224 | MDI0000000000197 | Best | O | Au |
| 225 | MDI0000000000196, MDI52O09SE00021, MDI52O09SE00022 | Esso Zone | Pr | Au |
| 226 | MDI0000000000201 | CH-1 Trench | O | Au |
| 227 | MDI52O09SE00027 | Mitchell Zone | Pr | Au |
| 228 | MDI0000000000200 | Puffin (Line 40) | O | Au |
| 229 | MDI0000000000199, MDI52O09SE00020, MDI52O09SE00025 | Mariposite Zone | Pr | Au |
| 230 | MDI52O09SE00009 | Pic-Pat Syndicate | O | Au |
| 231 | MDI52O09SE00016 | Savoy | O | Au |
| | **Central Patricia Area** | | | |
| 232 | MDI52O09SE00002 | Walker Patricia | O | Au |
| 233 | MDI0000000000218 | CP-63 Zone | O | Au |
| 234 | MDI52O08NE00019 | Gateway Patricia G-26 | O | Au |
| 235 | MDI52O08NE00018, MDI52O08NE00040, MDI52O08NE00041, MDI52O08SE00002 | Gateway Patricia | Pr | Au |
| 236 | MDI52O08NE00008 | Central Patricia No. 1 Mine | PPO | Au, Ag |
| 237 | MDI0000000000219 | CP-40 | O | Au |
| 238 | MDI0000000000220 | CP-97 | O | Au |
| 239 | MDI0000000000223 | CP-12 | O | Au |
| 240 | MDI0000000000221 | CP-8 | O | Au |
| 241 | MDI52O08NE00003 | Dona Patricia | O | Au |
| | **Dona Lake Area** | | | |
| 242 | MDI52O08NE00124 | Masakayash | O | Au |
| 243 | MDI52O08NE00002 | Wright, D. | O | Au |
| 244 | MDI52O08NE00010 and DO (see text) | Dona Lake Mine | PPR | Au |
| 245 | MDI52O08NE00034 | Dona Lake 24 | O | Au |
| 246 | MDI52O08NE00033 | Dona Lake 23 | O | Au |
| 247 | MDI52O08NE00035 | Dona Lake 25 | O | Au |
| 248 | MDI52O08NE00014 | Dona Lake 5 | O | Au |
| 249 | MDI52O08NE00036 | Dona Lake 26 | O | Au |
| 250 | MDI52O08SE00007 | Seahorse Lake | DO | Au |
| 251 | MDI52O08NE00012 | Firth (Dona Lake 1) | DO | Cu, Zn |
| 252 | MDI52O08NE00020 | Eye Lake (Dona Lake 11) | Pr | Au |
| 253 | MDI0000000000236 | Eye Lake North | O | Au |
| | **Pickle Crow Area** | | | |
| 254 | MDI0000000000216 | Marietta Zone II | O | Au |
| 255 | MDI52O08NE00038 | CP-42 Zone | O | Au |
| 256 | MDI0000000000215 | Road Zone (CP-37) | O | Au |
| 257 | MDI0000000000202 | Southwest Iron Formation Zone | Pr | Au |
| 258 | MDI52O08NE00009 | Central Patricia No. 2 Mine / Springer Shaft / No. 6 Zone | PPR | Au, Ag |
| 259 | MDI0000000000213, MDI52O08NE00037 | Field Zone | Pr | Au |
| 260 | MDI0000000000214 | Hook Vein | O | Au |
| 261 | MDI0000000000212, MDI52O08NE00021, MDI52O08NE00039 | Southwest Powderhouse Zone | DPrR | Au |
| 262 | MDI52O08NE00006 | Lakeshore Vein | Pr | Au |
| 263 | MDI52O08NE00005 | Big Dome Vein | O | Au |
| 264 | MDI52O08NE00004 | Ropelle Vein | Pr | Au |
| 265 | MDI0000000000208 | Northeast Powderhouse Zone | DPrR | Au |
| 266 | MDI52O09SE00007, MDI52O08NE00126, MDI52O09SE00033 | Pickle Crow | PPR | Au, Ag |
| 267 | MDI52O08NE00017 | Kaw Crow Patricia KC-26 | O | Au |
| 268 | MDI52O09SE00015 | Winoga W-5 (Tarp Lake 6c) | O | Au |
| 269 | MDI52O08NE00016 | Marietta Zone I | O | Au |
| 270 | MDI52O09SE00014 | Winoga W-18 (Tarp Lake 6b) | O | Au |
| 271 | MDI52O09SE00013 | Winoga Prospect (Tarp Lake 6a) | Pr | Au |
| 272 | MDI0000000000203 | No. 3 Shaft Vein | O | Au |
| 273 | MDI0000000000206 | ABC Zone | Pr | Au |
| 274 | MDI0000000000207 | Strickland Veins | O | Au |
| 275 | MDI0000000000204 | Albany Porphyry Zone (No. 17 and 18 veins) | Pr | Au |
| 276 | MDI0000000000205, MDI52O09SE00012 | D-Zone East and Sigmoid Vein Zone | Pr | Au |
| 277 | MDI52O09SE00004 | Cohen–MacArthur | Pr | Au |
| 278 | MDI52O09SE00005 | Pickwick | O | Au |
| 279 | MDI0000000000209 | Central Patricia Northeast Claims | Pr | Au |
| 280 | MDI52O09SE00006 | Crowshore Patricia | DPrO | Au |
| 281 | MDI52O09SE00018 | G-P-81-6 | O | Au |
| 282 | MDI52O09SE00010 | Crowshore Patricia A-2 | O | Au |

### Commodity[b]

- Ag ± (Cu ± Zn)
- Au ± (Ag ± Cu ± Fe ± Mo ± Pb ± Sb ± Th ± U ± W ± Zn)
- Be
- Cu ± (Ag ± Au ± Co ± Mo ± Ni ± Pb ± PGE ± W ± Zn)
- Fe
- Li ± (Be ± Nb ± Ta ± W)
- Mo ± (Ag ± Au ± Cu ± Li)
- Nb
- Ni ± (Co ± Cu ± PGE)
- S
- Sb ± (Au)
- Ta ± (Cs ± Li ± Rb)
- U
- Zn ± (Ag ± Au ± Cu ± Pb)

### Status[b,c]

- Mine ("Past Producing Mine With Reserves"; "Past Producing Mine Without Reserves")
- Prospect ("Developed Prospect With Reserves"; "Developed Prospect Without Reserves"; "Prospect")
- Occurrence ("Occurrence"; "Discretionary Occurrence")

### Type[c]

- Felsic and intermediate intrusion-associated deposit
- Mafic and ultramafic volcanic/intrusion-associated deposit
- Sediment-associated deposit
- Vein/replacement deposit
- Volcanic-associated deposits
- Unknown deposit type

### Abbreviations[b,d]

Ag.....silver
Au.....gold
Be.....beryllium
Co.....cobalt
Cs.....cesium
Cu.....copper
Fe.....iron
Li.....lithium
Mo.....molybdenum
Nb.....niobium
Ni.....nickel
Pb.....lead
PGE.....platinum group elements
Rb.....rubidium
S.....sulphur
Sb.....antimony
Ta.....tantalum
Th.....thorium
U.....uranium
W.....tungsten
Zn.....zinc

DO.....Discretionary Occurrence
DPrO.....Developed Prospect Without Reserves
DPrR.....Developed Prospect With Reserves
O.....Occurrence
PPO.....Past Producing Mine Without Reserves
PPR.....Past Producing Mine With Reserves
Pr.....Prospect

### Classification Example

square symbol = felsic and intermediate intrusion-associated deposit

176 — pink colour = lithium ± tantalum; medium size = developed prospect with reserves; 176 = McCombe prospect

*[a] Mineral occurrences are derived from the Mineral Deposit Inventory 2 (MDI2) database maintained by the Ontario Ministry of Northern Development and Mines. Information reflects updates to the database as of April 1, 2008, and includes new deposit and/or new location information developed as a result of this project. The deposits shown are designated in MDI2 as "Past Producing Mine With Reserves"; "Past Producing Mine Without Reserves"; "Developed Prospect With Reserves"; "Developed Prospect Without Reserves"; "Prospect", "Occurrence"; "Discretionary Occurrence".*

*[b] Colours indicate commodity at mine, prospect or occurrence.*

*[c] Size of "Deposit Type" symbol indicates status.*

*[d] Abbreviations used for commodity.*

### Symbols

- Dike
- Fault
- Geological contact

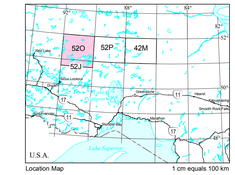
# MAP 1

## Mineral occurrences of the central and eastern Uchi domain: Lake St. Joseph area (NTS 52 O) and Sioux Lookout area (NTS 52 J, northern portion).

Scale 1:250 000

5000 m 0 5 10 km

NTS References: 52 O and part of 52 J




Location Map

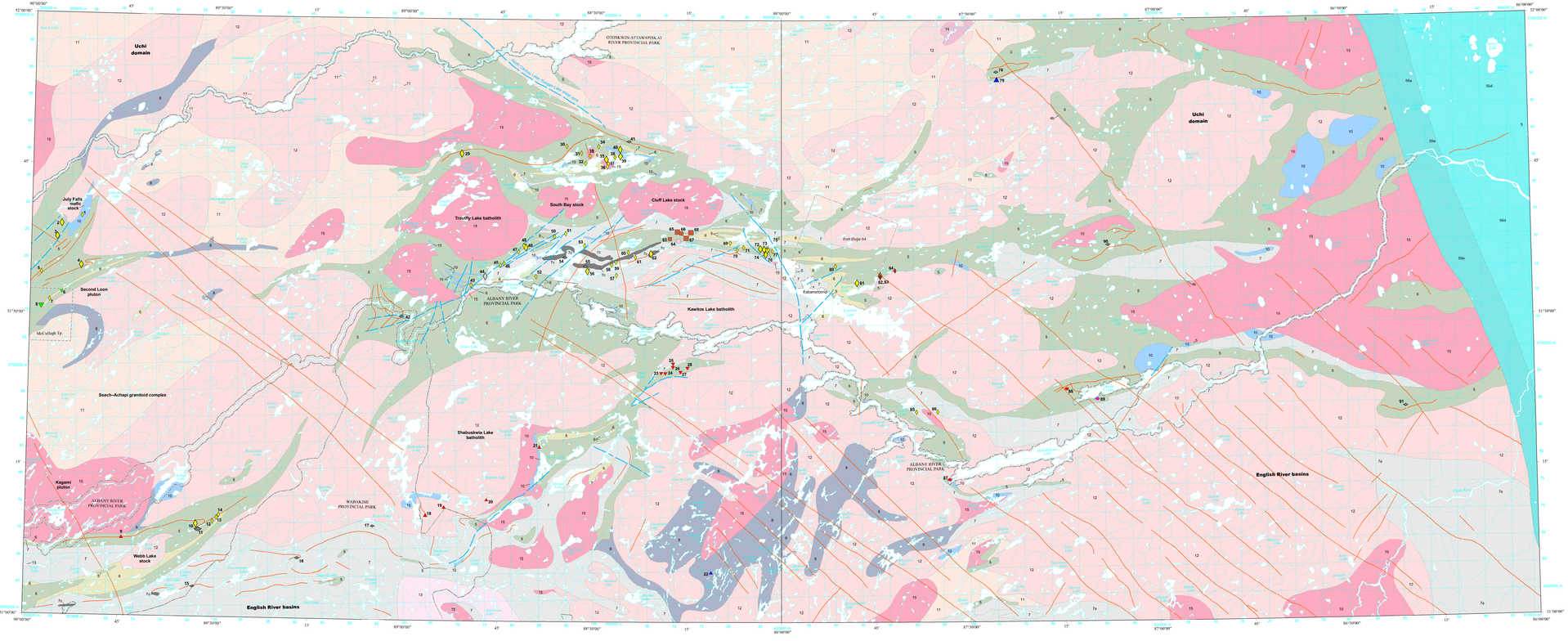
1 cm equals 100 km

### Lithology[a]

| | |
|---|---|
| 15 | Massive granodiorite to granite |
| 14 | Diorite-monzodiorite-granodiorite suite |
| 13 | Muscovite-bearing granitic rock |
| 12 | Foliated tonalite suite |
| 11 | Gneissic tonalite suite |
| 10 | Mafic and ultramafic rocks |
| 8 | Migmatized supracrustal rock |
| 7 | Metasedimentary rock |
| 7c | Marble, chert, iron formation, minor metavolcanic rock |
| 7e | Paragneiss and migmatite |
| 6 | Felsic to intermediate metavolcanic rocks |
| 5 | Mafic to intermediate metavolcanic rocks |
| 4b | Mafic metavolcanic rock, metasedimentary rock and pyroclastic rock |

*[a] Geology is from Ontario Geological Survey (2003).*

Accompanies OFR 6228




## MINERAL OCCURRENCES*

| DEP # | MDI NUMBER | DEPOSIT NAME | STATUS | COMMODITY |
|---|---|---|---|---|
| **Miminiska Lake Area NTS 52 P** | | | | |
| | **Judy Falls Area** | | | |
| 1 | MDI000000000001 | Judy Falls Mafic Stock | O | Au |
| 2 | MDI000000000002 | Judy Falls No. 1 | Pr | Au |
| 3 | MDI52P12NW0003 | Little Judy Falls | Pr | Au |
| | **Lake St. Joseph Greenstone Belt** | | | |
| | **McCullagh Creek–First Loon Lake Area** | | | |
| 4 | MDI52P12SW0006 | First Loon Lake | Pr | Au |
| 5 | MDI52P12SW0004 | Kaa River | O | Au |
| 6 | MDI000000000169 | McCullagh Creek KAF-89-34 | O | Zn |
| 7 | MDI000000000168 | McCullagh Creek KAF-87-18 | O | Au |
| 8 | MDI52P12SW0013 | McCullagh Creek Zinc | Pr | Zn, Cu, Ag, Au |
| | **English River Metasedimentary Basins** | | | |
| | **Mashkow River Area** | | | |
| 9 | MDI52P04NE0012 | Sturdy (Hummingbird Lake) | O | Cu, Ni, Co |
| 10 | MDI52P04NE0009 | Ontario Gold Joint Venture Mashkow River | Pr | Au |
| 11 | MDI52P04NE0011 | Mashkow River Iron | Pr | Au |
| 12 | MDI52P04NE0001 | Dome Mashkow River 312-001 | O | Au |
| 13 | MDI52P04NE0002 | Dome Mashkow River 312-004 | O | Au |
| 14 | MDI52P03NW0003 | Dome Mashkow River 312-005 | O | Au |
| | **August Lake–Bason Lake Area** | | | |
| 15 | MDI52P04SE0003 | August Lake | O | Fe |
| 16 | MDI52P03NW0003 | Greenmantle Lake | O | Fe |
| 17 | MDI52P03NE0003 | Heart Attack (Bawiti) Lake | O | Fe |
| | **Miminiska–Fort Hope Greenstone Belt** | | | |
| | **Shabuskwia Lake–Wesse Lake Area** | | | |
| 18 | MDI52P02NW0004 | Leitch | O | Cu, Ni, Co |
| 19 | MDI52P02NW0005 | Gould Lake | O | Cu, Ni |
| 20 | MDI000000000143 | Luella Lake | O | Cu, Ni |
| 21 | MDI52P07SE0003 | Wesse Lake | O | Cu, Ni, Ag, Au |
| | **Sim Lake Area** | | | |
| 22 | MDI000000000142 | Sim Lake | O | Ni, Cu, Co, PGE |
| | **Eabamoose–Kawitos Lake Area** | | | |
| 23 | MDI52P08NW0004 | Ryley–Cormac | O | Cu, Zn, Pb, Ag, Au |
| 24 | MDI52P08NW0004 | Gold Fields | O | Cu, Zn, Pb, Ag, Au |
| 25 | MDI52P08NW0004 | Ivza | O | Cu, Zn, Pb, Ag, Au |
| 26 | MDI52P08NW0003 | NJZ-76 | O | Cu, Zn, Pb, Ag, Au |
| 27 | MDI52P08NW0002 | Duorgan (Allamayo) | O | Cu, Zn, Pb, Ag, Au |
| 28 | MDI52P08NW0003 | Boylen, M.J. | O | Cu, Zn, Pb, Ag, Au |
| | **Talbot Lake Area** | | | |
| 29 | MDI52P15SW0004 | Talbot Lake | Pr | Au |
| | **Kesihk Lake Area** | | | |
| 30 | MDI52P15SE0004 | Hansen | O | Au |
| 31 | MDI52P15SE0005 | NBK | O | Au |
| 32 | MDI000000000152 | KL-35 Zone | O | Au |
| 33 | MDI000000000153 | S04-12 | O | Au |
| 34 | MDI52P15SW0015 | KL-31 Zone | O | Au |
| 35 | MDI52P15SW0016 | KL-32 Zone | O | Au |
| 36 | MDI000000000154 | S04-08 | O | Au |
| 37 | MDI000000000155 | S04-09 | O | Au |
| 38 | MDI000000000151 | KL-38 Zone | O | Au |
| 39 | MDI52P15SW0008 | KL-116 Zone | Pr | Au |
| 40 | MDI52P15SW0009 | KL-27 Zone | Pr | Au |
| 41 | MDI52P15SW0006 | Brash–Kesihk Lakes | O | Fe |
| | **Howells Lake–Miminiska Peninsula Area** | | | |
| 42 | MDI52P11SE0003 | Snowdrift Lake | O | Fe |
| 43 | MDI52P08NW0013 | Cume | O | Au, Ag |
| 44 | MDI52P10NW0007 | Howells Lake | DPR | Sb, Au |
| 45 | MDI000000000163 | MC79-10 | O | Au |
| 46 | MDI52P10SE0003 | Thompson | O | Au |
| 47 | MDI000000000160 | Baroque-Felmont | O | Au |
| 48 | MDI000000000165 | S04-01 | O | Au |
| 49 | MDI000000000166 | Baroque Grid 12B | O | Au |
| 50 | MDI000000000144 | 89-MM-13 | O | Au |
| 51 | MDI52P10NE0002 | Ymir (Sorbi–Bayne) | O | Au |
| 52 | MDI000000000142 | M-6 | O | Au |
| | **Miminiska Lake–Wottam Lake–Goss Lake Area** | | | |
| 53 | MDI52P10NE0007 | Hoka | O | Au |
| 54 | MDI000000000145 | Miminiska Lake Iron West | O | Fe |
| 55 | MDI000000000144 | Miminiska Lake Iron East | O | Fe |
| 56 | MDI000000000157 | Miminiska Lake Gold | Pr | Au |
| 57 | MDI52P09SW0008 | Wottam Lake (WS41) | O | Au, Ag |
| 58 | MDI52P09SW0006 | International (WSwya3) | O | Au |
| 59 | MDI52P09SW0010 | North Wottam Lake | O | Au |
| 60 | MDI000000000158 | SL87-04 | O | Au |
| 61 | MDI000000000146 | WSwya1 | O | Au |
| 62 | MDI52P09SW0002 | Goss Lake | DPR | Au |
| | **Fort Hope Area (NTS 42 M)** | | | |
| 63 | MDI000000000140 | JJ Dike | O | Ta, Cs |
| 64 | MDI52P09NW0004 | Spidumene Dike | O | Li, W |
| 65 | MDI000000000142 | Pickuite Dike | DPR | Ta, Cs, Li, Rb |
| 66 | MDI000000000151 | F-Anomaly | O | Ta, Cs, Li, Rb |
| 67 | MDI000000000150 | South Dike | Pr | Ta, Cs, Li, Rb |
| 68 | MDI000000000147 | Ruhelitte Dike | DPR | Ta, Cs, Li, Rb |
| | **Rond Lake–Oyikoyan Lake Area** | | | |
| 69 | MDI52P05SE0009 | Rich Lake | O | Au, W |
| 70 | MDI000000000140 | OL-87-17 | O | Au |
| 71 | MDI000000000141 | OL-87-18 | O | Au |
| 72 | MDI000000000136 | OL-29 | Pr | Au |
| 73 | MDI52P08NW0001 | OL-12 | Pr | Au |
| 74 | MDI52P05SE0002 | Fort Hope Gold Mine | Pr | Au |
| 75 | MDI000000000137 | Zone 41 | Pr | Au |
| 76 | MDI000000000138 | Zone 41 Extension | O | Au |
| 77 | MDI000000000139 | Rond Lake | O | Au |
| | **Fort Hope Area (NTS 42 M)** | | | |
| | **Miminiska–Fort Hope Greenstone Belt** | | | |
| | **Norton Lake Area** | | | |
| 78 | MD42M14NW0006 | Norton Lake Iron | O | Fe |
| 79 | MD42M14NW0009 | Norton Lake Cu-Ni-Co-PGE | DPR | Ni, Cu, Co, PGE |
| | **Reserve Creek Area** | | | |
| 80 | MD42M12SW0005 | Pioneer Lake | O | Au |
| 81 | MD42M12SW0004 | Zulapa | DPR | Au, Ag |
| 82 | MD42M12SE0007 | Dome | DO | Cu, Au, Mo |
| 83 | MD42M12SE0008 | Reserve Creek | DPR | Au, Ag, W, Cu, Mo |
| 84 | MD42M12SE0006 | Veeley Lake | O | Cu, W |
| | **Sylvait Lake–Wachi Lake Area** | | | |
| 85 | MD42M05NE0001 | Sylvait Lake | O | Au |
| 86 | MD42M05SE0002 | Sylvia Lake | O | Au |
| 87 | MDI000000000111 | Copper on GSC Map 56-1963 | DO | Cu |
| 88 | MDI000000000112 | Asarco Sample Location No. 6 | O | Cu |
| 89 | MD42M09NE0004 | Barringer | DO | S |
| | **Lelievre Occurrence and Dark River Occurrence Areas** | | | |
| 90 | MD42M11SE0004 | Lelievre (Goff Lake) Iron | O | Fe |
| 91 | MD42M08SW0004 | Dark River Iron | O | Fe |

### Commodity*

- Ag ± (Cu ± Zn)
- Au ± (Ag ± Cu ± Fe ± Mo ± Pb ± Sb ± Th ± U ± W ± Zn)
- Be
- Cu ± (Ag ± Au ± Co ± Mo ± Ni ± Pb ± PGE ± W ± Zn)
- Fe
- Li ± (Be ± Nb ± Ta ± W)
- Mo ± (Ag ± Au ± Cu ± Li)
- Ni
- Ni ± (Co ± Cu ± PGE)
- S
- Sb ± (Au)
- Ta ± (Cs ± Li ± Rb)
- U
- Zn ± (Ag ± Au ± Cu ± Pb)

### Status*,**

- Mine ("Past Producing Mine With Reserves", "Past Producing Mine Without Reserves")
- Prospect ("Developed Prospect With Reserves", "Developed Prospect Without Reserves", "Prospect")
- Occurrence ("Occurrence", "Discretionary Occurrence")

### Type*

- Felsic and intermediate intrusion-associated deposit
- Mafic and ultramafic volcanic/intrusion-associated deposit
- Sediment associated deposit
- Vein/replacement deposit
- Volcanic-associated deposits
- Unknown deposit type

### Abbreviations*,**

Ag.....silver
Au.....gold
Be.....beryllium
Co.....cobalt
Cs.....cesium
Cu.....copper
Fe.....iron
Li.....lithium
Mo.....molybdenum
Nb.....niobium
Ni.....nickel
Pb.....lead
PGE.....platinum group elements
Rb.....rubidium
S.....Sulphur
Sb.....antimony
Ta.....tantalum
Th.....thorium
U.....uranium
W.....tungsten
Zn.....zinc

DO.....Discretionary Occurrence
DPR.....Developed Prospect With Reserves
DPW.....Developed Prospect Without Reserves
O.....Occurrence
PPO.....Past Producing Mine Without Reserves
PPR.....Past Producing Mine With Reserves
Pr.....Prospect

### Classification Example

diamond symbol = vein/replacement deposit
yellow colour = gold
medium size = prospect
4 = First Loon Lake prospect

*Mineral occurrences are derived from the Mineral Deposit Inventory 2 (MDI) database maintained by the Ontario Ministry of Northern Development and Mines. Information reflects updates to the database as of 2009. Mineral occurrences are classified according to information developed as a result of this project. The deposits shown are designated in MDI2 as "Past Producing Mine With Reserves", "Past Producing Mine Without Reserves", "Developed Prospect With Reserves", "Developed Prospect Without Reserves", "Prospect", "Occurrence", "Discretionary Occurrence".*

*Colours indicate commodity at mine, prospect or occurrence.

*Size of "Deposit Type" symbol indicates status.

**Abbreviations used for commodity.

***Only the most significant mineral occurrences within this map area designated as "Past Producing Mine With Reserves", "Past Producing Mine Without Reserves" or "Developed Prospect Without Reserves".

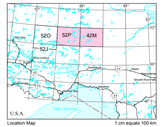
# MAP 2

## Mineral occurrences of the central and eastern Uchi domain: Miminiska Lake area (NTS 52 P) and Fort Hope area (NTS 42 M).

Scale 1:250 000

5000 m 0 5 10 km

NTS References: 52 P and 42 M




Location Map 1 cm equals 100 km

### Lithology**

- 95d — Red Head Rapids Formation
- 95e — Churchill River Group
- 15 — Massive granodiorite to granite
- 14 — Diorite-monzodiorite-granodiorite suite
- 13 — Muscovite-bearing granitic rock
- 12 — Foliated tonalite suite
- 11 — Gneissic tonalite suite
- 10 — Mafic and ultramafic rocks
- 8 — Migmatized supracrustal rock
- 7 — Metasedimentary rock
- 7c — Marble, chert, iron formation, minor metavolcanic rock
- 7a — Paragneiss and migmatite
- 6 — Felsic to intermediate metavolcanic rocks
- 5 — Mafic to intermediate metavolcanic rocks

*Geology is from Ontario Geological Survey (2003).

**For a more recent and detailed compilation of the geology for this area, see Maclon, Mcilreith and Stott (2009).

### Symbols

- Dike
- Fault
- Geological Contact

Accompanies OFR 6228