Manitoba
Energy and Mines
Geological Services

Mineral Deposit Series

Report No. 10

Mineral Deposits and Occurrences in the Garner Lake Area, NTS 52L/14

by P. Theyer and K.J. Ferreira
Winnipeg, 1990

TABLE OF CONTENTS

Page

FIGURES

Page

TABLES

MAP

INTRODUCTION

This report and accompanying map are part of a Mineral Deposit Series presenting a uniformly organized and up-to-date collation and analysis of information on mineral occurrences in the Province of Manitoba. The series is intended: (1) to provide explorationists with a geoscientific data base that can be used in mineral exploration; and (2) to provide a technical data base for other government users in resource evaluations, formulation of mineral and land use policies and the initiation of regional development programs.

METHODOLOGY

The documentation program was initiated in the main mining districts of the province under the 1984-1989 Canada-Manitoba Mineral Development Agreement. Under this project mineral deposit geologists of the Geological Services Branch have attempted to inspect and evaluate each known mineral occurrence. These site visits ranged from a preliminary half day or less search of an area for old workings, to extensive geological mapping of selected occurrences for a week or more. In addition, for each occurrence the geologists have attempted to synthesize available data from published and unpublished sources. The Manitoba Mineral Inventory Card Index and the cancelled Assessment Files have been used extensively in the preparation of the report. Mineral occurrences represented by cancelled assessment file compilation are identified as such under the heading 'Name'. Information for all other occurrences was acquired primarily by field examination supplemented by cancelled assessment file compilation.

The locations of all mineral deposits and occurrences are presented in Figure 1.

Deposit versus Occurrence

Throughout this report mineralization is referred to as a deposit if tonnage and grade figures are known; all other mineralization is referred to as an occurrence.

Massive Sulphide versus Solid Sulphide

The use of 'massive sulphide' in the geological literature is confusing in that it is not always clear whether the authors are referring to a 'massive sulphide deposit' (cf. Sangster, 1972) or a section of sulphide-rich rock. In this publication 'massive sulphide' will be used in reference to a deposit type, i.e., a volcanogenic massive sulphide deposit type, rather than the nature of the mineralization. A volcanogenic or sedimentogenic massive sulphide deposit can contain a sulphide lens that locally contains as little as 10% sulphide minerals by volume. The alteration zones that are an integral part of many massive sulphide deposits rarely contain more than 50% sulphide minerals. Consequently, the use of 'solid sulphide' for 75%-100% and 'near solid sulphide' for 50%-75% sulphide minerals is adopted in place of the commonly used term 'massive' to describe the textural aspects of a sulphide mineralization.

FORMAT OF MINERAL DEPOSIT MAPS

Location:

One of the incentives spurring the mineral deposit documentation was the absence of accurate location maps for known mineral occurrences. Inaccurate land bases have previously resulted in failure to find old workings, surveys conducted in wrong areas, and even cancellation of intended surveys by explorationists. Consequently, considerable field time has been spent in establishing occurrence locations and attempts have been made to display exact locations both on the map and in the accompanying report.

The location number on the map is a unique reference number that will be used both in the report and the geologists' unpublished data base. Where the volume of occurrence/deposit data within a 1:50 000 NTS map sheet is large enough to be more efficiently presented by dividing the map sheet in half or into quadrants (cf. Map MDS87-1, NTS 63K/13 SE) reference numbers will be consecutive only within the individual map sheet.

Deposit Types:

In order to maintain a mineral deposit classification, which will be useful to both explorationists and metallogeneticists, a simplified descriptive classification was selected. This classification is based on the use of common deposit types for the classification of both deposits and occurrences. The classification of mineralization is based on the premise that the mineral explorationists requires information on metals and types of mineralization in an area as well as on the economic deposits (past, present and future producers).

All deposits and occurrences are classified according to the Deposit Type classification in Table 1.

The deposit type displayed on the map represents the mineralization with the greatest economic potential, for example a disseminated narrow chalcopyrite layer is emphasized rather than a much thicker solid pyrite-graphite layer.

Mineralization:

A symbol is used to denote the percentage and/or type of mineralization present. At some localities more than one type of mineralization is present. The type of mineralization displayed in the symbol represents the mineralization with the greatest economic potential as indicated by the deposit type symbol. It should be noted that in the context of this report a "sulphide facies iron formation" is equivalent to a "sulphide stratum". For a discussion of sulphide stratum the reader is referred to Gale *et al.* (1980).

Host Rocks:

In general, this description refers to the immediately underlying and overlying rock types. When several rock types are present in an extensive zone of mineralization, the most common rock types are indicated.

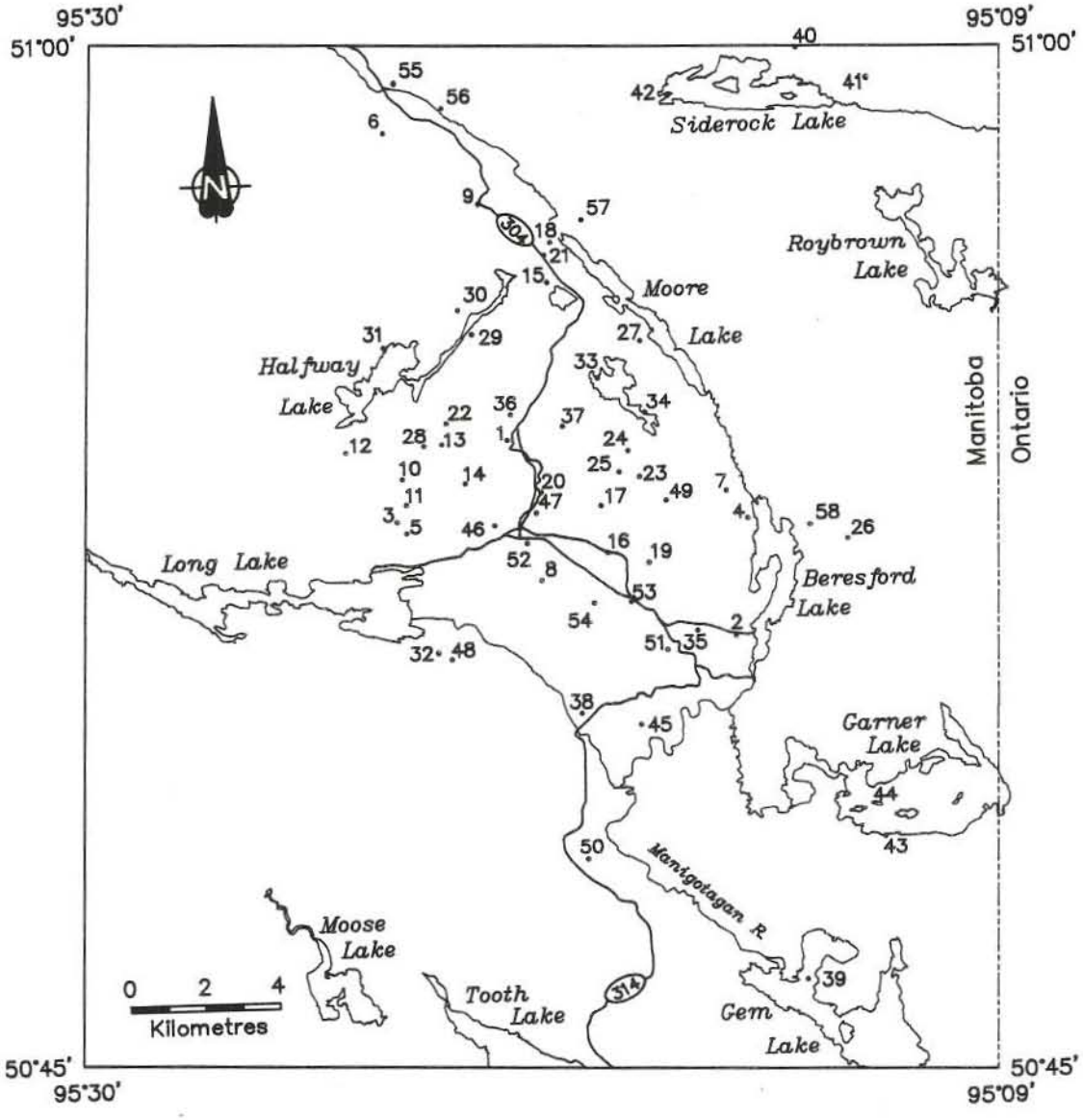


Figure 1: Location of mineral deposits and occurrences (52L/14).

TABLE 1. MINERAL DEPOSIT TYPES

STRATABOUND MASSIVE SULPHIDE TYPE DEPOSITS
- a) Volcanic rock associated
- b) Sedimentary rock associated
- c) Alteration zone associated with a or b

CHEMICAL SEDIMENT TYPE DEPOSITS
- a) Sulphide facies iron formation
- b) Oxide facies iron formation
- c) Carbonate facies iron formation
- d) Silicate facies iron formation
- e) Other chemical sediments

VEIN TYPE DEPOSITS
- a) Single vein
- b) Multiple veins or lenses
- c) Stockwork

MAGMATOGENIC TYPE DEPOSITS ASSOCIATED WITH MAFIC/ULTRAMAFIC ROCKS
- a) Disseminated
- b) Layered
- c) Net textured
- d) Podiform

DEPOSITS WITH PORPHYRY AFFINITIES
PEGMATITE TYPE DEPOSITS
CLASTIC SEDIMENT TYPE DEPOSITS
REPLACEMENT TYPE DEPOSIT
DISSEMINATED MINERALIZATION - NOT CLASSIFIED

Elements:

This description allows for a maximum of three metals present in increasing order of abundance by volume. The precious and base metals are indicated in preference to elements such as iron and carbon.

In some cases it has been more efficient on the map and in the report to make reference to an area of mineralization rather than individual deposits or occurrences. All mineralization in the area delineated by a dotted line on the map is referenced in the report under the location number within that area.

FORMAT OF MINERAL DEPOSIT REPORTS

Location:

Each deposit or occurrence description will contain the unique deposit reference number, deposit or claim name where applicable, UTM coordinates, general area description, the reference number of the airphoto on which the deposit can be located and a brief description of method(s) of access.

Exploration Summary:

This section provides a summary of the extent of exploration. Information for this section was compiled from Mineral Inventory Cards, cancelled Assessment Files, and maps and files from the Mining Recording Office.

Geological Setting:

In this section the general geology of a deposit or occurrence is described. The information levels of the descriptions vary considerably and depend largely upon the extent of geological mapping during the documentation project. For further details the reader should consult the references cited.

Mineralization:

A detailed description of the mineralogy, host rocks and mineralization-related alteration provide the readers with the opportunity to make their own evaluation of the significance of a mineral occurrence or deposit.

Geochemical Data:

Most geochemical data included in this report are summarized from assays listed in drill logs submitted to fulfill assessment requirements. In addition, samples collected for geochemical analysis from site visits are described in this section.

Classification:

In this section the geologist may indicate the reasons for the classification appearing on the Mineral Deposit Map. For those localities containing more than one deposit type, the deposit types not shown on the map are documented here.

References:

These include both published and unpublished sources. For published and assessment report information the reader should obtain desired material directly from the source. The mineral deposit geologists will endeavor to supply copies of unpublished material on a deposit by deposit basis. References listed at the end of each occurrence description may also include sources of additional information not directly cited in the text.

ABBREVIATIONS

The following abbreviations are used throughout the occurrence descriptions:

A.F.	assessment file(s)
CB	claim block
c.g.	Coarse grained
cm	centimetre
DDH	diamond drill hole(s)
diss.	disseminated
EM	electromagnetic
f.g.	Fine grained
g/t	grams per tonne
HLEM	horizontal loop electromagnetic
km	kilometre
m	metre
MDS	Mineral Deposit Series
m.g.	Medium grained
tr.	trace
VLEM	vertical loop electromagnetic
VLF-EM	very low frequency electromagnetic
py	pyrite

po	pyrrhotite
cp	chalcopyrite
sp	sphalerite
apy	arsenopyrite

Conventional symbology is used for minerals and elements.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the assistance of P. Yamada for compiling the data. E. Su drafted the figures using Autocad programs; E. Gravely and M. Carvalho drafted the map that accompanies this report. R. Gaba and P. Stewart carried out field examinations of some of the occurrences. G. Gale provided technical review; D.A. Baldwin and W.D. McRitchie edited the manuscript.

NOTE

This mineral deposit report and the accompanying map are intended to be active documents that can be updated as new information becomes available. Although revisions of the publication are anticipated, any additional unpublished information may be obtained by contacting the authors or the Director, Geological Services Branch.

GEOLOGY OF AREA 52L/14

The geological base for mineral deposit map sheet 52L/14 is compiled from the following geological maps:

1) Geology of the Wanipigow River-Manigotagan River region, a geological compilation map at a scale of 1 inch = 1 mile by W. Weber (1971a).
2) Geology of the Long Lake-Gem Lake area at a scale of 2 inches = 1 mile by W. Weber (1971b).
3) Geology of the Wallace Lake-Siderock Lake area at a scale of 1 inch = 0.5 mile by W.D. McRitchie (1971).
4) Stormy Lake preliminary geological map, 1:10 000 scale by D.M. Seneshen and D. J. Owens (1985).

The map area is underlain by the east-southeast-trending Rice Lake greenstone belt in the Superior Structural Province of the Precambrian Shield in Manitoba. The supracrustal rocks of the Rice Lake greenstone belt are separated from the Manigotagan Gneissic Belt, a suite of paragneiss, schist, tonalite and monzonite south of the greenstone belt, by the northwest-striking Manigotagan Fault. On the north and east the Rice Lake greenstone belt is separated from the Wanipigow River Plutonic Complex, a suite of predominantly quartz dioritic, granodioritic and gneissic rocks, and the Wallace Lake greenstone belt, by the east-southeast-striking Wanipigow Fault.

The Rice Lake greenstone belt consists of the dominantly volcanic Rice Lake Group intruded by rocks of the Ross River Pluton and felsic and mafic dykes. The lower part of the Rice Lake Group is subdivided into the Bidou Lake and Gem Lake subgroups comprising volcanic and derived sedimentary rocks (Campbell, 1971; Weber, 1971b). Both subgroups are overlain by sedimentary rocks of the Edmunds Lake Formation, the youngest formation of the Rice Lake Group (Campbell, 1971).

The Wallace Lake greenstone belt, northeast of the Rice Lake greenstone belt is separated from the Rice Lake greenstone belt by the Wanipigow Fault;its northern margin is in contact with the Wanipigow River Plutonic Complex. Rocks of the Wallace Lake greenstone belt are part of the Wallace Lake Subgroup which is part of the Rice Lake Group.

The Wallace Lake Subgroup consists of Siderock Lake Formation rhyodacitic to dacitic pyroclastic rocks and derived sedimentary rocks, Big Island Formation basalt and Conley Formation conglomerate, wacke, siltstone, magnetite chert iron formation and basalt. Each formation is subdivided into an eastern and a western part due to significant lateral lithological changes ascribed to lateral facies changes (McRitchie 1971a).

The majority of the Wallace Lake greenstone belt consists of rocks of the Conley Formation including feldspathic wacke and pebbly feldspathic wacke interbedded with siltstone, magnetite chert iron formation and basalt in the west. The eastern facies of the Conley Formation consists of argillite with pillowed basalt, magnetite chert iron formation and quartzite (McRitchie 1971a). Basalt of the Big Island Formation is pillowed and massive. Discontinuous lenses of iron formation are described by Gaba, (1985b). Minor amounts of dacitic to rhyodacitic volcanic wacke are ascribed to the Siderock Lake Formation (McRitchie 1971a).

Quartz dioritic to dioritic rocks of the Ross River Pluton are prominent in this map sheet. This multiphase intrusion, together with dykes and sills of diabase and quartz-feldspar porphyry, predate the Wanipigow River Plutonic Complex (McRitchie, 1971b; Weber, 1971b). Ultramafic rocks of the Garner Lake intrusion,and the Dove Lake cortlandite, are considered to be late orogenic intrusions (Scoates, 1971).

The lithologies of the Rice Lake greenstone belt correlate with those of the Wallace Lake greenstone belt if an apparent 16 km right lateral displacement of the Wallace Lake greenstone belt along the Wanipigow Fault is considered (McRitchie, 1969).

Six periods of deformation can be distinguished in the Rice Lake greenstone belt, including three stages of folding and later fracturing:

1) D_1 - development of large scale isoclinal folds;
2) D_2 - development of small scale folds, a regional S_2 foliation parallel to the axial planes of these folds, and flattening of fragments in the plane of S_2 foliation;
3) D_3 - development of small scale flexural slip folds;
4) D_4 - movement along S_2, and possibly the development of the Manigotagan Fault;
5) D_5 - development of major northwest- and northeast-trending, steeply dipping conjugate shear zones; and
6) D_6 - development of microbrecciation fractures and ultramylonite zones, and the main movement along the Wanipigow Fault between the Rice Lake greenstone belt, the Wanipigow River Plutonic Complex and Wallace Lake greenstone belt (Weber, 1971a; McRitchie and Weber, 1971).

Lithologic units are generally steeply inclined to vertically dipping. All supracrustal and intrusive rocks are overprinted with an east-southeast-trending foliation (S_2).

Mineral deposits and occurrences located within the area of this map sheet are generally Au-bearing quartz veins and shear zones hosted by mafic rocks. The most prominent deposits are in rocks of the Bidou Lake subgroup: 1) the Central Manitoba Au Mine (Kitchener and Growler deposits; Location 1), in which Au occurs in a quartz-bearing shear zone hosted by greywacke of the Tinney Lake Formation; 2) the Gunnar Mine (Location 2), in which Au occurs in several lenticular quartz veins hosted by pillowed mafic volcanic rocks of the Gunnar Formation; and 3) the Ogama and Rockland shafts (Location 3) that were sunk to exploit one of the very few known Au-bearing quartz veins hosted by quartz diorite of the Ross River Pluton.

The Mirage occurrence (Location 8), comprising Au-bearing quartz veins in an altered gabbro, also contains anomalous concentrations of Pt and Pd. Geological mapping (McRitchie and Weber, 1971; Owens and Seneshen, 1985) indicate that this gabbro is part of an areally extensive suite of geologically related mafic intrusive rocks. Mafic rocks of this suite also host stibnite and Au mineralization southeast of Long Lake (Location 38) and the Tut Au occurrence (Location 45).

The prevalent style of known mineralization in the Wallace Lake greenstone belt, located in the northernmost part of the map area, comprise chemical sediment type deposits of graphite and Fe-sulphide mineralization in a suite of fine grained sedimentary rocks, and magnetite-chert iron formation interlayered with mafic volcanic rocks. With the exception of gold flakes observed in a polished section (R. Gaba, pers. comm., 1986), these rocks are not known to contain anomalous Au.

SELECTED BIBLIOGRAPHY

Campbell, F.H.A.

1971: Stratigraphy and sedimentation of part of the Rice Lake group, Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 135-188.

Fedikow, M.A.F.

1981: Mineral deposit studies-Superior Province-southeastern Manitoba; **in** Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, 1981, p. 64-73.

McRitchie, W.D.

1969: Project Pioneer; **in** Manitoba Mines and Natural Resources, Summary of Geological Fieldwork, 1969, Geological Paper 4/69, p. 107-114.

1971a: Geology of the Wallace Lake-Siderock Lake area; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/6, 1:31 680.

1971b: The petrology and environment of the acidic plutonic rocks of the Wanipigow-Winnipeg Rivers region, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 7-62.

1971c: Geology of the Wallace Lake-Siderock Lake area: a reappraisal; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 107-126.

McRitchie, W.D. and Weber, W.

1971: Metamorphism and deformation of the Manigotagan Gneissic Belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 235-284.

Owens, D.J., and Seneshen, D.M.

1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Scoates, R.F.J.

1971: Ultramafic rocks of the Rice Lake greenstone belt; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 189-202.

Seneshen, D.M., and Owens, D.J.

1985: Geological investigations in the Stormy Lake area; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 112-119.

Stephenson, J.F.

1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

1972: Gold deposits of the Rice Lake-Beresford Lake area, southeastern Manitoba; University of Manitoba, Ph.D. Thesis (unpublished), 294p.

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Theyer, P.

1988: Platinum group elements investigations; **in** Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1988, p. 158-160.

Theyer, P. and Gaba, R.G.

1986: Mineral deposit investigations in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1986, p. 120-124.

Weber, W.

1971a: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

1971b: Geology of the Long Lake-Gem Lake area; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 63-106.

Wright, J.F.

1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

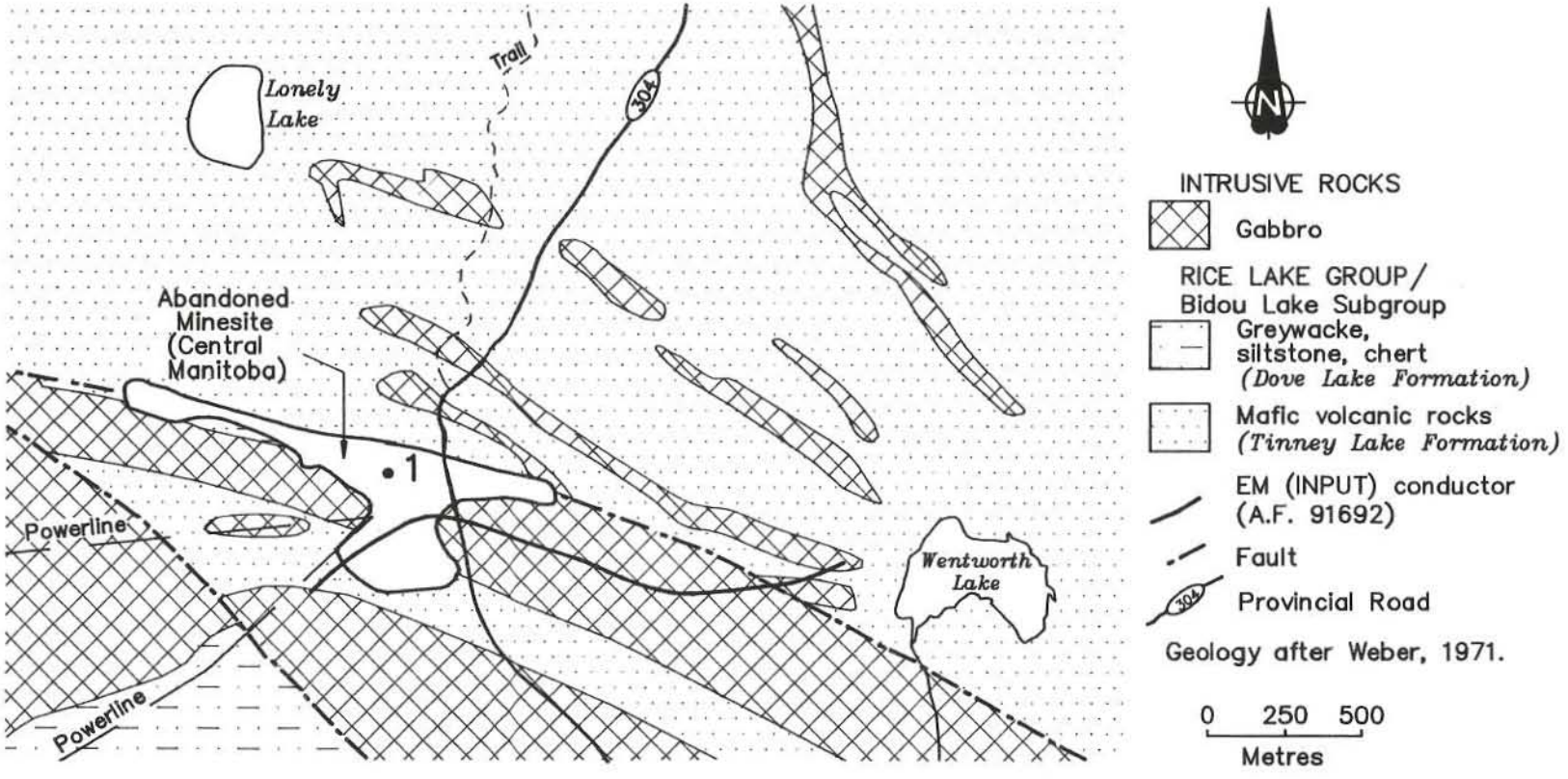


Figure 1-1: Geological setting of occurrence 1 (Central Manitoba Au mine).

MINERAL DEPOSITS AND OCCURRENCES: GARNER LAKE AREA (52L/14)

LOCATION: 1

NAME: CENTRAL MANITOBA AU MINE

UTM: Kitchener shaft. 5641542N/335470E
Growler shaft. 5641600N/335020E
Tene shaft. 5641060N/336480E
Rogers shaft. 5641020N/336480E
Hope shaft. 5640975N/336980E

ACCESS: Via Provincial Road 304 to the abandoned minesite approximately 3 km north of the Long Lake road junction.
Kitchener shaft. Abandoned mine road from Provincial Road 304.
Tene shaft. Traverse 600 m east of the Kitchener shaft along abandoned mine road, then 50 m north.
Growler shaft. Traverse 550 m west of the Kitchener shaft along abandoned powerline, then 100 m north.
Rogers shaft. Traverse 600 m east of the Kitchener shaft along abandoned mine road, then 100 m south.
Hope shaft. Traverse 1100 m east of the Kitchener shaft along abandoned mine road, then 40 m south.

AREA: 2 km west of Wentworth Lake.

AIRPHOTO: A24670-100

EXPLORATION SUMMARY:

A detailed exploration history of the deposit is given in Mineral Inventory Cards 52L/14NW Au10, Au11, Au12, and Au13, and for the period 1924-1937, in Stockwell and Lord (1939). The first claims staked at location 1 were the Kitchener, Growler and Gold Coin claims in 1915, and the Pan Handle claim in 1916.

W.A.D. Syndicate commenced underground work on the Kitchener vein and surface work on other veins in the immediate area in 1924. W.A.D. Syndicate merged with Anglo-Canadian Explorers Limited to form Central Manitoba Mines Limited in 1925. Central Manitoba Mines Limited built a 165 tonne/day mill and continued underground development. Production commenced in 1927 on the Kitchener vein and additional shafts were sunk on the property. Known ore reserves were exhausted and production ceased in 1937. During the course of its operations, Central Manitoba Mines Limited produced 4536.96 kg Au and 738.01 kg Ag from 480 182 tonnes of ore. A total of almost 16 km drifting and crosscutting and 32 km diamond drilling were completed. Production was from the Kitchener, Eclipse, No. 1 Branch, No. 2 Branch, Rogers, Hope, Tene 2 and Tene 6 quartz veins and shear zones; in addition, the Tene North, Tene South, Wentworth and No. 1 shear zones were explored by Central Manitoba Mines Limited In total, five shafts were sunk: 1) Growler, at the west end of the Kitchener vein; 2) Kitchener, at the east end of the Kitchener vein where it bifurcates into the Eclipse and No. 1 Branch veins; 3) Tene, intersecting the Tene 6 shear zone; 4) Rogers, intersecting the Rogers vein; and 5) Hope, intersecting the Hope shear zone.

J. Calverley staked the ground in 1977 and conducted a trenching and sampling program. In 1979 ownership was changed to F. Calverley and Production Lease 26 was issued to cover the claim. In 1979 the holder's name was changed to Calverley Prospecting Limited. W.B. Dunlop staked claims surrounding PL 26 in 1978. Mid-North Resources Limited gained control of all of the ground in 1981 and transferred ownership to Camflo Mines Limited. Camflo Mines Limited conducted VLF-EM and magnetometer surveys, followed by geochemical sampling and geological mapping programs. The feasibility of custom hauling and milling was studied in 1982; 437 tonnes of material were custom milled, but recovery statistics are not available. In 1984 Camflo Mines Limited optioned the ground jointly to Angela Development Limited and Arbor Resources Incorporated, who conducted a ten hole diamond drill program, the results of which are not available.

GEOLOGICAL SETTING:

The area is underlain by the Wadhope gabbro sill, flanked by mafic volcanic rocks (Fig. 1-1). The mafic volcanic rocks are flanked by and interlayered with greywacke; both rock types form the Tinney Lake Formation at this locality. Descriptions of location 1 are included in Wright (1932), Stockwell and Lord (1939), Stephenson (1971), and Fedikow (1981). At the occurrence gabbro

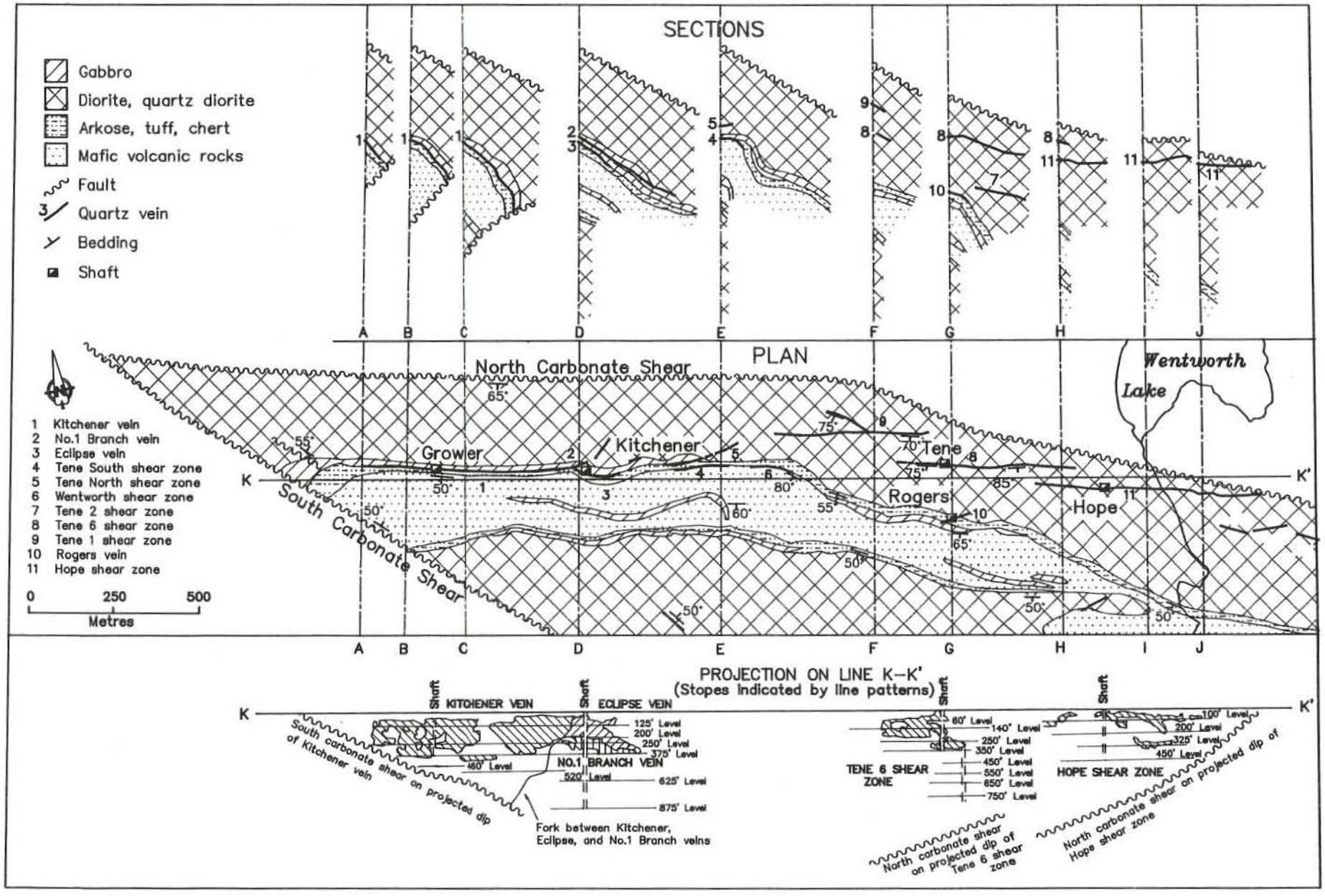


Figure 1-2: Plan, sections, and underground workings of Central Manitoba Au mine (1); after Stockwell and Lord (1939).

is in sharp contact with a 12 m thick unit of massive, green-grey greywacke that contains minor banded cherty and tuffaceous sedimentary rocks. The gabbro is locally hornblende- phyric, coarse grained, and has a mafic to intermediate composition. Locally it contains subrounded to rounded, 1-5 mm, blue quartz eyes. The tuffaceous sedimentary rocks and greywacke are in contact with a 150 m thick sequence of massive, pillowed, and brecciated mafic volcanic rocks oriented at approximately 285°/60°S. Minor lamprophyre and quartz-feldspar porphyry dykes are present.

Two shear or fault zones, namely the North Carbonate Shear and the South Carbonate Shear, define the limits of a trough-shaped block, the axis of which strikes 120° and pitches 20°-30°E. The block encloses a 2.8 km long and up to 150 m thick belt of quartz-bearing shear zones near the intrusive/sedimentary contact (Fig. 1-1, 1-2). The North Carbonate Shear, approximately 30 m thick, is concordant with stratigraphy. It dips 65°S in the west, steepening to near vertical in the east. The North Carbonate Shear either merges with, or is cut off to the west by, the South Carbonate Shear. The South Carbonate Shear, 30-60 m thick, is oriented 135°/50-60°NE. The North and South Carbonate shears consist of chlorite-sericite schist partly replaced by carbonate and penetrated by numerous small lenses and stringers of quartz and carbonate. The block hosts numerous, *en echelon*, 285°-trending shear zones containing coarse grained to sugary, glassy to smoky to blue-black quartz. The quartz veins are up to 640 m long and are generally 1.2-1.5 m thick, but attain thicknesses up to 7.5 m. The veins contain minor to rare amounts of plagioclase, ankerite, chlorite, sericite and K-feldspar.

MINERALIZATION:

Moderate amounts of pyrite, pyrrhotite and chalcopyrite, and minor to rare marcasite, arsenopyrite and sphalerite occur as disseminated grains and veinlets in quartz veins/lenses. Gold mineralization is confined to quartz bodies; it is associated with pyrite and some chalcopyrite, but not with pyrrhotite and visible gold is rare. Mineralization within the gabbro sill is most abundant in a sheared, bleached, silicified zone associated with 1-5 cm long pods of clear to milky quartz that probably represent disrupted quartz veins. A shear zone in greywacke approximately 1 m south of, and parallel to, the gabbro-greywacke contact is filled with blue quartz and contains disseminated pyrite, chalcopyrite, dark green-black chlorite wisps, and rounded clear quartz grains. With increasing depth, quartz becomes white, and sulphide and Au contents decrease correspondingly. Wright (1932) and Fedikow (1981) note that a 15-20 cm thick zone of interbanded light- to greenish-grey, siliceous, cherty and tuffaceous rock hosts the quartz veins and marks the contact between gabbro and greywacke (Fig. 1-3). The siliceous banding may represent shear related silicification along the contact, or primary chert may have been deposited in association with the tuffaceous sediments. Wright (1932) notes that the largest quartz bodies and highest ore grades are within drag-folded "bay-like" projections of the cherty unit into the gabbro.

Stephenson (1971) investigated wall-rock alteration at the Hope shear zone. An inner alteration zone, encompassing the width of the shear zone (2.4 m), is characterized by quartz-carbonate-chlorite-sericite schist. The schist consists of fine grained, granular quartz-ankerite layers that alternate with chlorite layers in which accessory sericite is randomly oriented. An outer alteration zone extends 6 m outwards from the vein into the gabbro, and exhibits progressive replacement of saussuritized plagioclase by oligoclase or albite and uralitized hornblende by chlorite and ankerite toward the vein. Minor epidote, leucoxene and magnetite are also present in the wall rocks.

Stockwell and Lord (1939) present detailed descriptions of the individual veins; some of these data are summarized in Table 1-1.

GEOCHEMICAL DATA:

The average grade from the Central Manitoba Au Mine production was 12.3 g/t Au and 2.1 g/t Ag from 480 182 tonnes of ore. The Au/Ag ratio (6:1) is constant with changes in depth. In addition, an average of 0.5% Cu was recovered from the ore. One sample cited by Stockwell and Lord (1939) from the Kitchener vein also contained 0.009% Ni, probably bound in pyrrhotite, and trace Zn. A sample taken by M.A.F. Fedikow (unpublished data) at the Growler shaft contained 2.7 g/t Au, 5.5 g/t Ag, 0.70% Cu, trace Zn, and nil Pb.

The greywacke that hosts the quartz-filled shear zone at the Kitchener shaft was sampled at approximately 10 m intervals for 150 m along strike to test for evidence of major, minor and trace element zonation by M.A.F. Fedikow (unpublished data). The samples were analyzed for Cu, Zn, Pb, Fe and Mn by AAS, and Au by neutron activation analysis (Table 1-2). The analytical results show that Cu, Zn, Fe and Au contents increase within 55 m of the deposit, reflecting increasing concentrations of sulphide minerals in the vicinity of the deposit (Fig. 1-4).

Stephenson (1971) studied major and trace element contents adjacent to the Hope vein (Fig. 1-5). His results indicated Na and Ca depletion, and K, CO_2 and H_2O enrichment toward the vein.

CLASSIFICATION:

Vein type deposit. Auriferous quartz veins and lenses in shear zones containing minor to moderate amounts of Fe-sulphide minerals and chalcopyrite are hosted by tuffaceous rocks, gabbro and diorite.

Table 1-1: Characteristics of veins and shear zones at location 1 (summarized from Stockwell and Lord, 1939)

Vein/Shear Zone	Orientation	Host Rock	Strike Length (m)	Width (m)	Quartz Colour	Sulphide Minerals	Development	Comments
Kitchener vein	285°/ 50-60°S flattens west	tuff	730 (surface) 305 (520' level)	1.2-1.5; pinch and swell	grey	cp, py, (po)	Kitchener shaft (main). Growler shaft; six levels to 160 m depth	Bifurcates on E end into No. 1 Branch vein and Eclipse vein.
No. 1 Branch vein	270°/ 65°S	tuff, gabbro	46-244 (above 520' level) 262,518 (625', 875' levels)	up to 5.5; pinch and swell, discontinuous	blue (above 375') speckled blue in white (below 375')	cp, py, (po)	From Kitchener shaft seven levels to 267 m depth	Branches from Kitchener vein.
Eclipse vein	305°/ 60°SW	tuff	146 (125' level)	up to 1.5; discontinuous	blue	py, cp, po	From Kitchener shaft; four levels to 115 m depth.	Branches from Kitchener vein.
No. 2 Branch vein	075°/ 60°S	gabbro, diorite	50	narrow, stringer, discontinuous	blue, minor white	po, py, cp	From Kitchener shaft; two levels to 75 m depth.	
Tene 1 shear zone	285°/ 70°S	diorite	397	0.6-3.7 lenses and stringers	white and blue	py, cp, (po)	Prospect pits	
Tene 2 shear zone	285°/ 75°S	diorite					From Tene 6 shaft; four levels to 229 m depth	
Tene 6 shear zone	285°/ 75°S	diorite	500	1-7	blue (above 350') white (below 350')	py, cp, po	Tene 6 shaft; eight levels to 229 m depth; 82,650 tonnes extracted	*En echelon* lenses; bifurcating
Tene North shear zone	270°/ 80°S	tuff, gabbro, diorite	290	scattered lenses, stringers	blue			
Tene South shear zone	275°/ steep S	tuff	107	up to 3; discontinuous quartz lenses	Fe oxide stained		Prospect shaft (5 m)	
Wentworth shear zone	295°/ 80°S	tuff		3	blue Fe oxide stained	py, cp, (po)	Prospect pit	Drilling indicates zone 9 m deep, 100 m long, average 13.6 g/t Au over 0.5 m average width
Rogers vein	270°/ 60°S	tuff, diorite	30	shear zone: 0.6-1.5 vein: 0.15-0.6	blue, Fe oxide stained	cp	Inclined shaft, 5510 tonnes extracted from and above 100' level	

Hope shear zone	285°/ near vertical	diorite	686 discontinuous	shear zone: up to 4.6 average 1.8-2.4, quartz lenses: 0.3-0.9	dark blue to spotted blue in white	py, cp, (po)	Hope shaft, four levels to 137 m; 305-550 m lengths	At E end of 325' level: 17.1 g/t Au over 1.1 m average width for 78 m along drift

Table 1-2: Analyses of greywacke samples near the Kitchener shaft

Sample No.	Cu ppm	Pb ppm	Zn ppm	Mn ppm	Fe ppm	Au ppb	Distance from vein
CM1	530	1	34	225	23850	140	15
CM2	30	1	30	275	19100	6	33
CM3	155	1	32	375	16800	180	39
CM4	118	1	27	240	13300	120	49
CM5	7	1	26	460	16300	1	54
M6	6	1	10	230	7300	2	65
CM7	4	1	16	160	11200	1	77
CM8	4	1	16	235	10200	5	92
CM9	41	1	26	315	15200	5	107
CM10	5	1	25	265	10500	2	138

REFERENCES:

Fedikow, M.A.F.
1981: Mineral deposit studies-Superior Province-southeastern Manitoba; in Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, 1981, p. 64-73.

Mineral Inventory Cards 52L/14 Au10, Au11, Au12, Au13
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stockwell, C.H.
1945: Gem Lake, Manitoba; Geological Survey of Canada, Geological Map 811A, 1:63 360.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

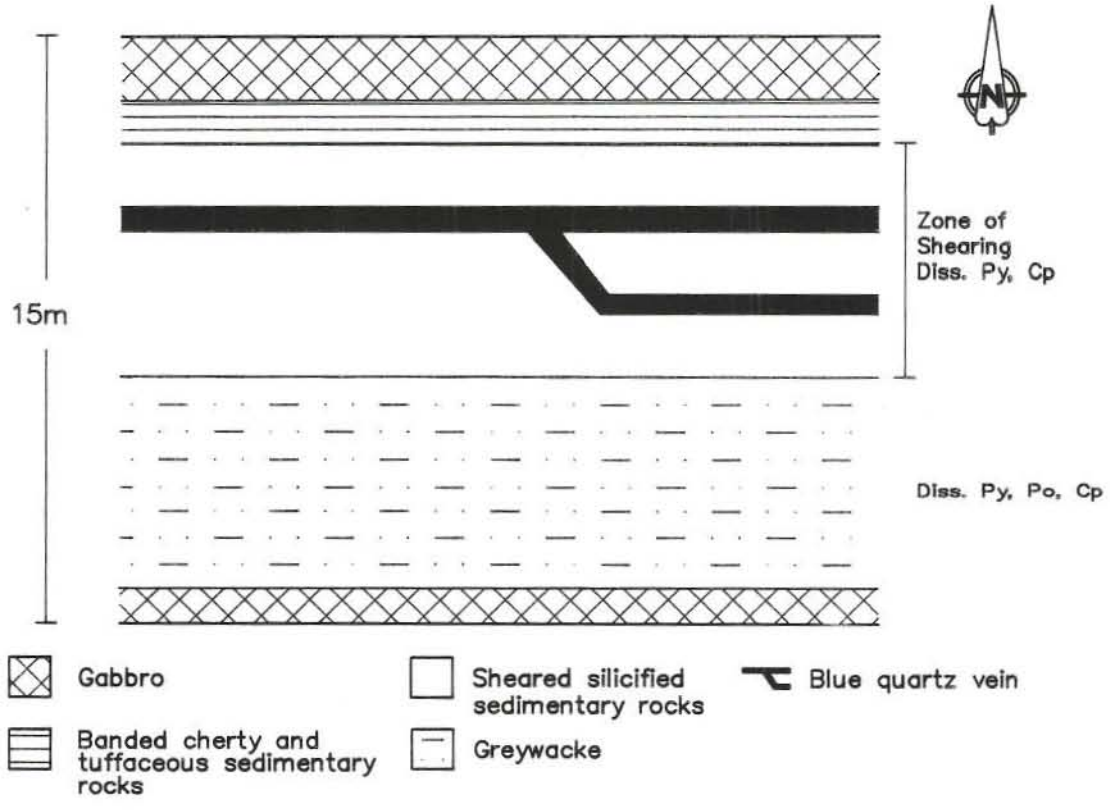


Figure 1-3: Schematic diagram illustrating the gabbro-greywacke contact and associated mineralization at the Kitchener vein (Fedikow, 1981).

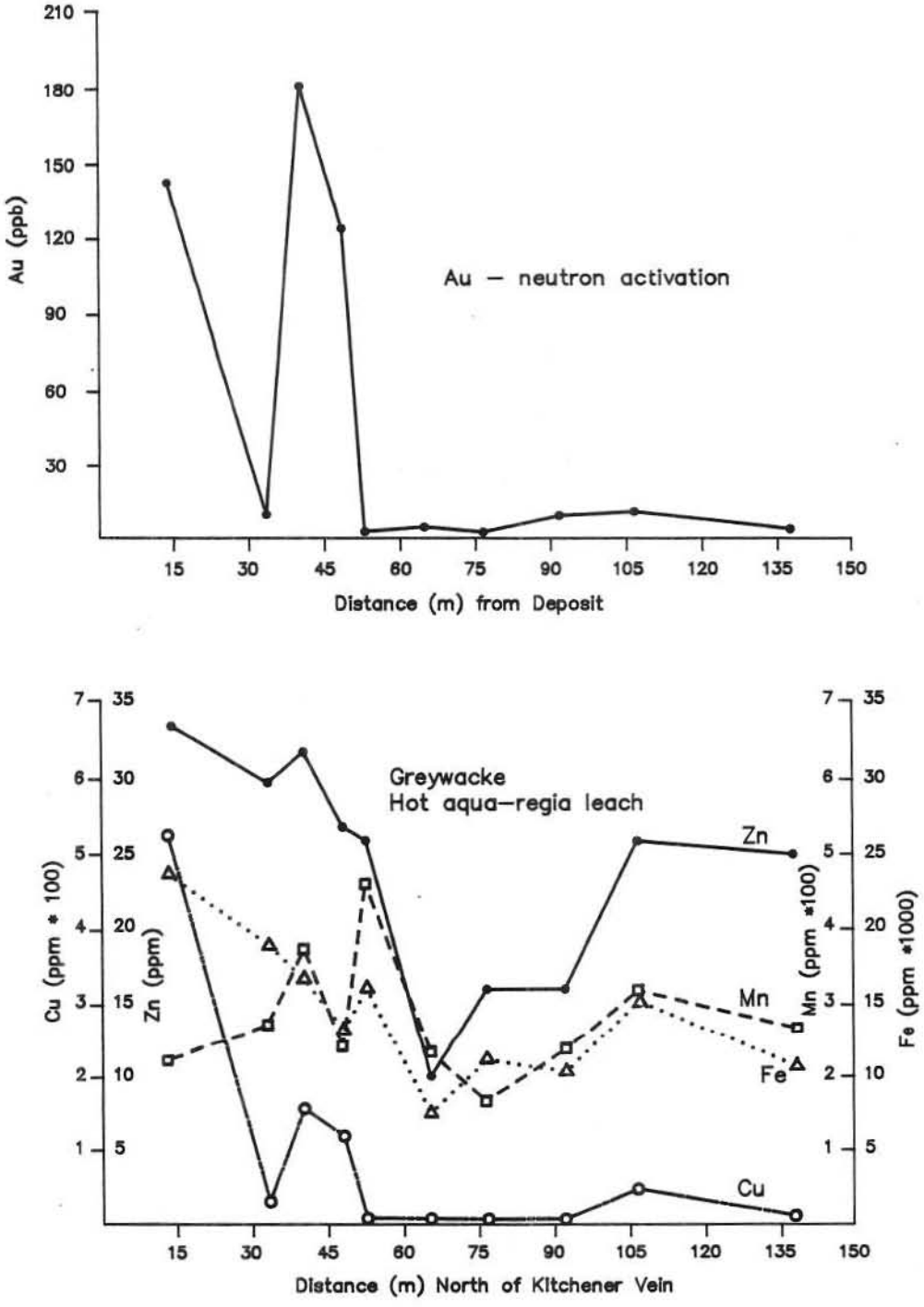


Figure 1-4: Variation in trace element content versus distance from the Kitchener vein (Fedikow, unpubl. data).

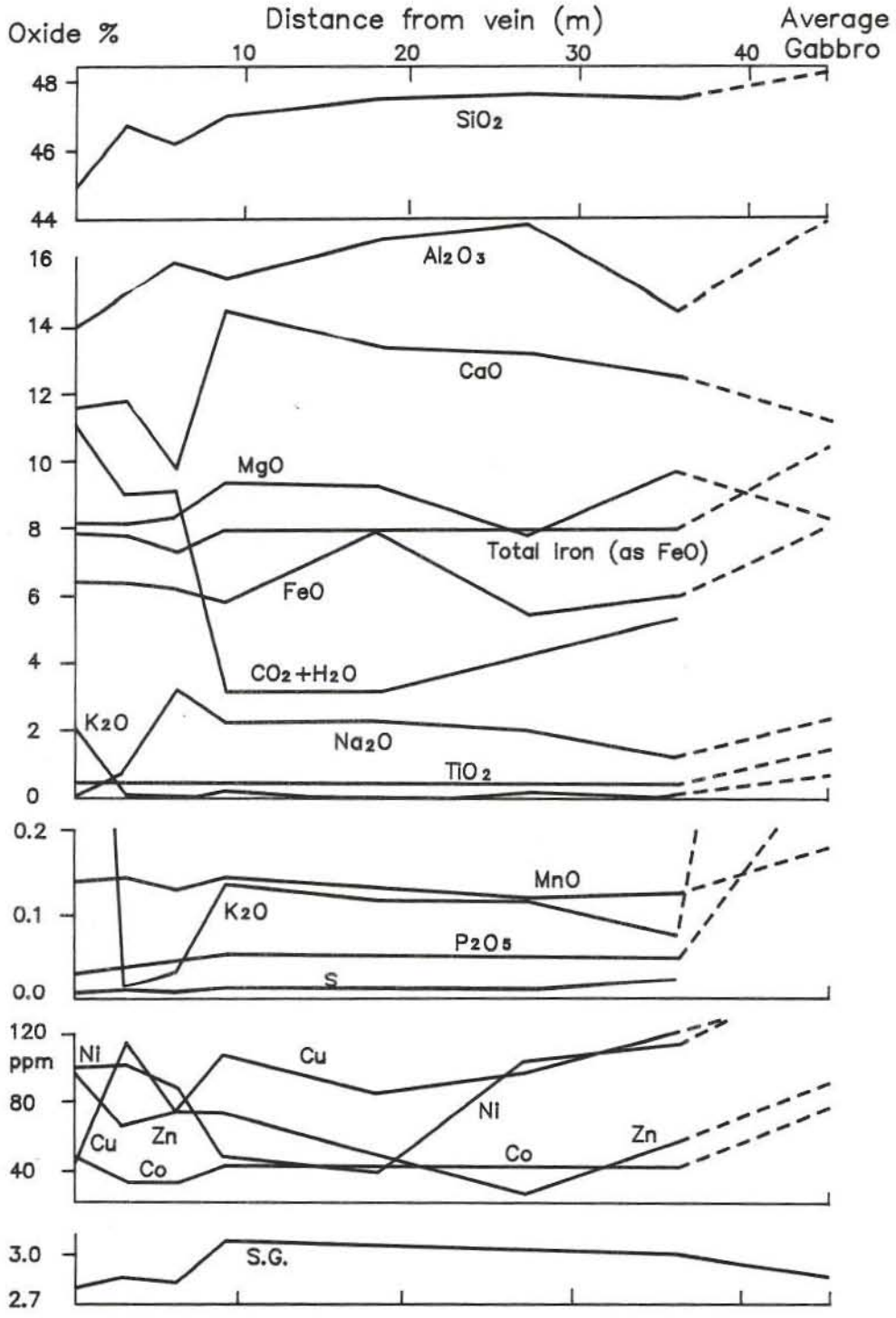


Figure 1-5: Composition of the altered wall rock and gabbro adjacent to the Hope vein, Central Manitoba Mines Limited (Stephenson, 1971).

LOCATION: **2**

NAME: GUNNAR MINE

UTM: 5636080N/341444E

ACCESS: Via Provincial Road 314, then 1.4 km along Beresford Lake access road, and 150 m along an abandoned mine road.

AREA: 0.8 km west of southern Beresford Lake.

AIRPHOTO: A24709-172

EXPLORATION SUMMARY:

The Gunnar Mine area was first recorded as the Gunnar Fraction in 1921 and as the Laird claim in 1933. In 1933 Gunnar Gold Mines Limited was incorporated and carried out diamond drilling and mine development to the start of production in 1936. The mine was developed from two shafts: (1) the No. 1 (main) shaft, sunk to exploit No. 1 and No. 2 shear zones on several levels to a depth of 380 m; and (2) the No. 2 shaft, to exploit No. 3 shear zone to a depth of 305 m (Shepherd, 1939). Additionally, the No. 4, 6 and 8 shear zones were explored by underground drifts. Geological mapping by Gunnar Gold Mines Limited was submitted for assessment credit in 1938 (A.F. 91400). Mining operations ceased in 1942; 3 103 kg Au were produced from 259 681 tonnes of ore (Mineral Inventory Card 52L/14 Au2). 22 257 m of diamond drilling was done from 1937 to 1942. The leases on the property expired in 1956.

A production lease was issued for the period 1976-1983. Cen Can Ore Recovery Limited optioned the property in 1979 to determine if Au could be beneficiated from the mine tailings; 62.2 g Au were extracted from 363 tonnes of tailings in August, 1979 (Mineral Inventory Card 52L/14SW Au2). Esso Resources Canada Limited carried out linecutting, geological mapping, channel sampling, VLF-EM and magnetometer surveys in 1980-81. In 1984 the ground was optioned to Highmark Resources Limited (50%) and Homestead Resources Limited (50%). VLF-EM, magnetometer and soil surveys, tailing sampling and prospecting were conducted in 1984.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation pillowed mafic volcanic rocks conformably overlain by Stormy Lake Formation feldspathic greywacke and siltstone. The rocks are folded about a north striking, southeast plunging anticline (Fig. 2-1). The mafic volcanic rocks are dark green and aphanitic with well preserved pillows and flow contacts. An elongate quartz-feldspar porphyry dyke, up to 90 m wide and 2.4 km long, crosscuts the strata subparallel to the axial plane of the anticline and plunges 45°NE (Fig. 2-2). Two generations of smaller dykes are present: (1) an older feldspar porphyry dyke with 2-3 mm plagioclase crystals in a dense aphanitic matrix; and (2) younger quartz-feldspar porphyry dykes that may represent apophyses of the larger porphyry body (Shepherd, 1939). A series of subparallel shear zones oriented approximately 110°/75-90°SW are 2-3 m thick, up to 600 m long and are filled with quartz and carbonate lenses and stockworks (Table 2-1). Minor late lamprophyre dykes postdate the shear zones (Shepherd, 1939).

MINERALIZATION:

Detailed descriptions of the Gunnar deposit are given in Shepherd (1939) and Stockwell and Lord (1939). Minor to trace pyrite, pyrrhotite, marcasite, chalcopyrite, sphalerite, arsenopyrite and galena are disseminated in quartz veins, and to a lesser extent, in white carbonate veins within shear zones. Gold grains, blebs and veinlets occur in fractured quartz veins; they are most abundant in granular quartz ribbons accompanied by albite, ankerite, sericite and fine grained sulphide minerals. Rarely, gold grains occur within pyrite crystals in quartz veins. At surface, the highest concentrations of Au are in quartz veins near the contact with the large quartz-feldspar porphyry body, but this relationship does not persist with depth. The presence of sphalerite was used by mine staff as a visual indicator of Au mineralization. However, Stephenson (1971) noted a closer correlation between the presence of chalcopyrite and Au contents in crushed ore samples. Shepherd (1939) noted that, although some zones had only marginal or lower Au contents at or near surface, some of these zones contained "profitable" shoots at depth. The Au/Ag ratio is 9:1.

Stockwell and Lord (1939) distinguish three types of quartz:

1) blue-grey, mottled and streaked, sugary to cherty quartz veinlets, less than one to several centimetres wide, parallel to the enclosing shear zones. These veins may contain accessory chlorite, albite, Fe-carbonate, white calcite, sericite, fuchsite and tourmaline. Sulphide and Au mineralization is most abundant in this type of quartz;
2) clear glassy quartz veinlets up to a few centimetres thick crosscutting the sugary grey quartz veinlets. Coarse grained granular carbonate, albite, and minor quantities of sulphide minerals and gold accompany these veinlets; and
3) massive, milky white quartz veinlets with low Au contents.

The quartz veins are emplaced in quartz-Fe carbonate-chlorite schist, which represents sheared volcanic rocks. Minor to trace albite, sericite, biotite, tourmaline, leucoxene and pyrrhotite accompany the schist. Gold is not present in the wall rocks. Shepherd (1939) notes that shear zones tend to follow narrow, elongate,

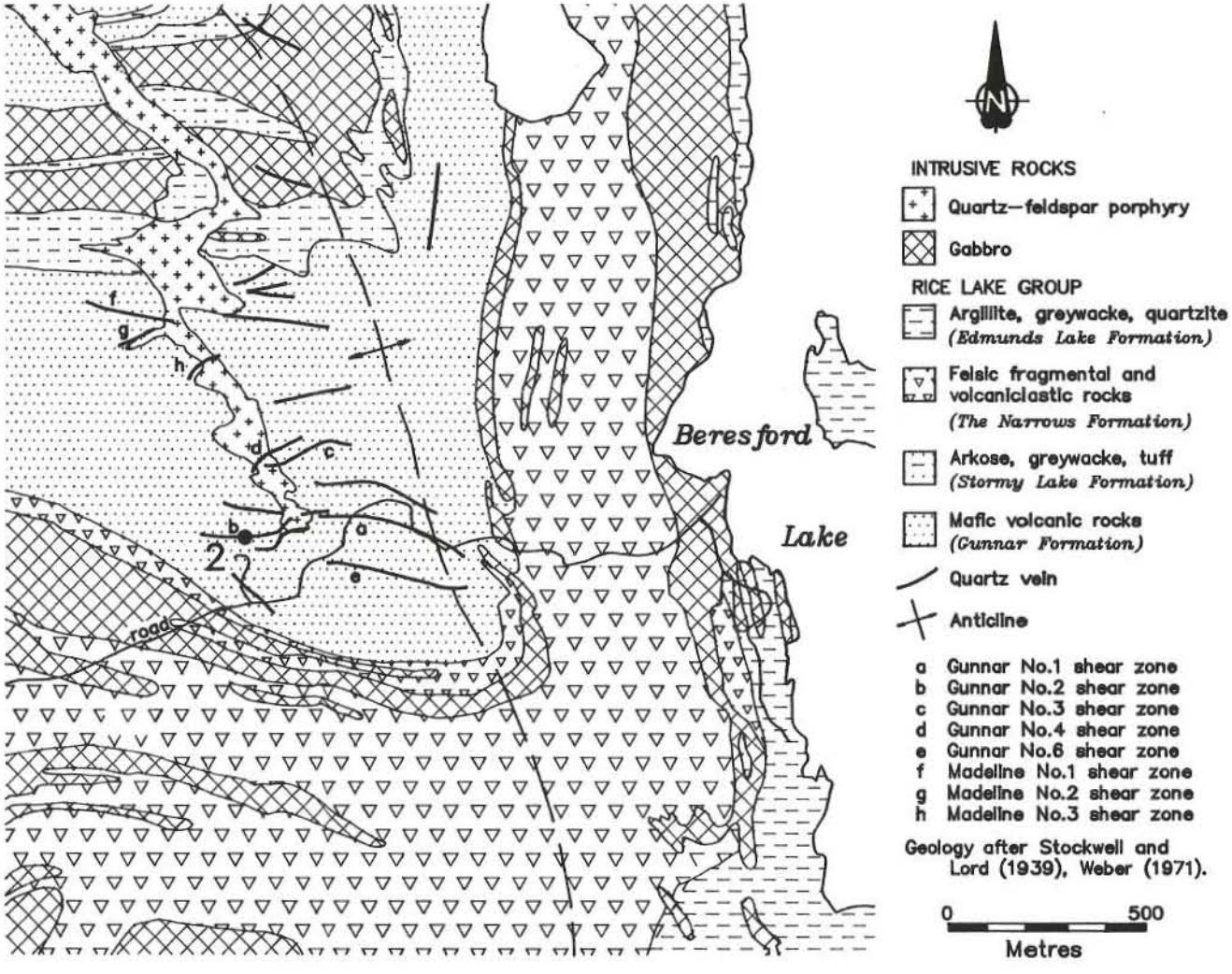


Figure 2-1: Geological setting of occurrence 2 (Gunnar Mine).

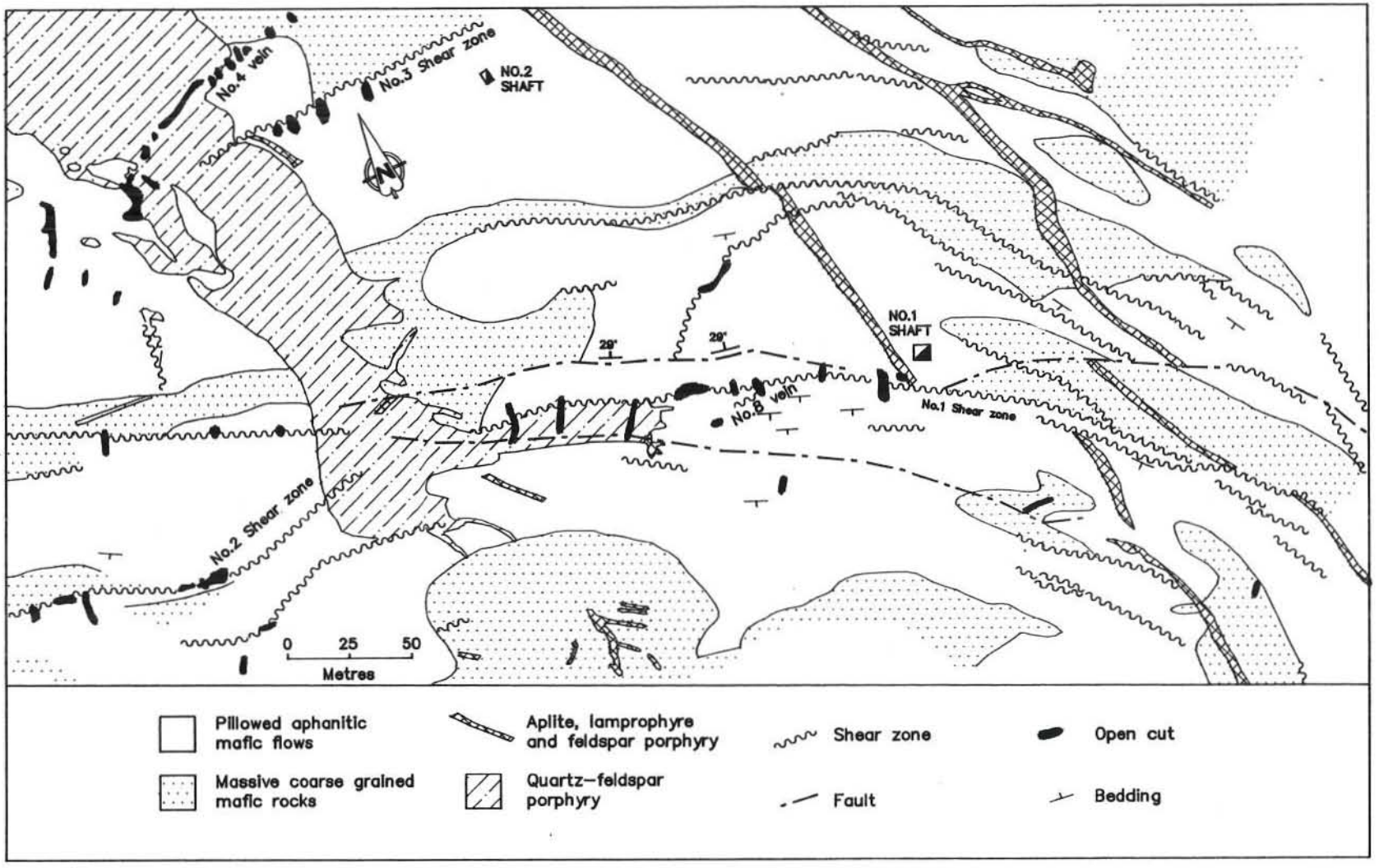


Figure 2-2: Detailed geology at the Gunnar minesite (after Stockwell and Lord, 1939; Gunnar Gold Mines Limited, A.F. 91400).

Table 2-1: Description of No. 1, 2, 3 shear zones (Stockwell and Lord, 1939).

Shear zone	Orientation	Strike length (m)	Width (m) average, max.	Shape of quartz bodies	Type of quartz
No. 1	290°/80°S-85°N	550	average 4.5, max. 9	lenses, stockworks	grey, white, sugary
No. 2	075-110°/ 85-90°S	250	2.1-6.1	bodies 0.5 m wide, up to 45 m long	grey, white, sugary
No. 3	090-150°/ 60-80°S	230	average 2.4 max. 6.1	---	---

tabular, felsitic masses; these probably represent zones of silicification adjacent to shear zones rather than discrete lithologic bodies.

Stockwell and Lord (1939) noted that a lamprophyre dyke crosscuts and postdates the shear zone in underground workings of the No. 1 zone, but in places this dyke is crosscut by closely spaced, parallel, auriferous quartz veinlets.

GEOCHEMICAL DATA:

An average grade of 11.9 g/t Au and 1.3 g/t Ag were recovered from ore mined during 1936-1942 (Mineral Inventory Card 52L/14SW Au2).

CLASSIFICATION:

Vein type deposit. Multiple auriferous quartz veins/lenses with minor polymetallic sulphide mineralization occur in shear zones in mafic volcanic rocks. Auriferous quartz veinlets in the lamprophyre dyke probably represent later mobilization of quartz and gold from the shear zones.

REFERENCES:

Assessment File 91400
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 52L/14SW Au2
Manitoba Energy and Mines, Minerals Division.

Shepherd, F.D.
1939: The Gunnar Mine, Manitoba; Canadian Institute of Mining and Metallurgy, Transactions, v. 42, p. 406-415.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: 3

NAME: OGAMA-ROCKLAND

UTM: Ogama shaft. 5639367N/332447E
Rockland shaft. 5639740N/331920E

ACCESS: Ogama shaft. Via Provincial Road 314 to Long Lake cottage subdivision; take right fork at junction to the boat landing; turn right at junction with the wooden headframe monument in the subdivision; follow trail 1.2 km north to abandoned minesite.
Rockland shaft. Continue northwest from the Ogama shaft for 200 m across powerlines; proceed 720 m along trail.

AREA: 1.3 km north of Long Lake.

AIRPHOTO: A24712-40

EXPLORATION SUMMARY:

Location 3 was first recorded as the Ogama claim by W.A. Quesnel and the Rockland claim by W. Walton in 1915. W.A.D. Syndicate Limited optioned the claims from 1924 to 1925, and conducted trenching and prospecting (Stockwell and Lord, 1939). In 1940 the Rockland claim was assigned to W.A. Quesnel. Arthur McLaren subleased the properties in 1940; the properties were optioned jointly to A. McLaren and Gunnar Gold Mines Limited in 1941. Diamond drilling totalling 790 m and sinking of a 36 m shaft were carried out in 1941. Ogama-Rockland Gold Mines Limited was incorporated in 1942 to develop the property. In 1942-43, 3 738 tonnes of ore containing 34.9 g/t Au were extracted and hauled to the Gunnar Mine (location 2) for milling (Mineral Inventory Card 52L/14 Au1).

In 1946-47 the shaft was deepened to 239 m and a mill was erected. Production recommenced and a shaft was sunk at the Rockland site in 1948. Further development included a second shaft on the Rockland vein and 5611 m of diamond drilling on both veins. Mining operations ceased in 1951. From 1948 to 1951, 129 948 tonnes of ore averaging 11.66 g/t Au was extracted and milled (Mineral Inventory Card 52L/14 Au1).

J. Calverley restaked the claims in 1966 and assigned them to H.T. Leslie. A 107 m drill hole was completed by Leslie in 1968 (A.F. 91116) and Gold Lake Resources Limited drilled five holes totalling 62 m in 1973 (A.F. 91567). W.B. Dunlop conducted linecutting and an EM survey in 1978 (Mineral Inventory Card 52L/14 Au1). Camflo Mines Limited carried out VLF-EM and magnetometer surveys, geological mapping, rock(?) geochemical surveys, and a feasibility study for a custom milling program in 1981-82. Angela Development Limited and Arbour Resources Incorporated jointly optioned the ground from Barrick Resources Corporation (formerly Camflo Mines Limited) in 1984, and drilled three holes (unknown length).

GEOLOGICAL SETTING:

The area is underlain by quartz diorite of the Ross River Pluton, flanked by mafic volcanic rocks of the Gunnar Formation and sedimentary rocks of the Stormy Lake Formation that have been intruded by gabbro sills (Fig. 3-1). Northwest-striking shear zones contain lenticular quartz veins (Fig. 3-2).

MINERALIZATION:

The Ogama shear zone, oriented 310°/80°NE, is 1-2 m wide and 250-300 m long. The Rockland shear zone branches from the Ogama shear zone; it is oriented 330°/80°NE and is 2-7 m wide and 125 m long. The host rock is quartz-sericite schist with veinlets of brown and pink Fe-carbonate. Stephenson (1971) also identified minor to trace plagioclase, epidote, leucoxene, pyrite, arsenopyrite, molybdenite and magnetite. A halo of disseminated pyrite, commonly marked by rusty weathered rock, extends approximately 20 m outwards from the mineralized quartz veins.

Minor to moderate pyrite and chalcopyrite, and trace visible gold occur in white to greyish-white cherty quartz in the Ogama shear zone (3a)(Fig. 3-2). Minor to moderate pyrite and chalcopyrite, with minor molybdenite and arsenopyrite occur in blue and white quartz in the Rockland shear zone (3b)(Fig. 3-2). In addition, Stephenson (1971) identified traces of sphalerite, pyrrhotite and tellurides at location 3. Gold occurs as inclusions in, or at grain boundaries in association with, pyrite and preferentially with arsenopyrite where it is present. Fe-carbonate, chlorite, sericite and K-feldspar also accompany the quartz veins.

GEOCHEMICAL DATA:

Approximately 1555.15 kg Au were recovered from the Ogama-Rockland veins in 1942-43 and 1948-51 (Stephenson, 1971). In 1942-43, 3 738 tonnes grading 34.9 g/t Au were extracted, and 129 948 tonnes grading 11.66 g/t Au were mined in 194851 (Mineral Inventory Card 52L/14 Au1).

CLASSIFICATION:

Vein type deposit. Multiple auriferous quartz veins with minor sulphide mineralization occur in shear zones in quartz diorite.

REFERENCES:

Assessment Files 91116, 91567
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 52L/14 Au1
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

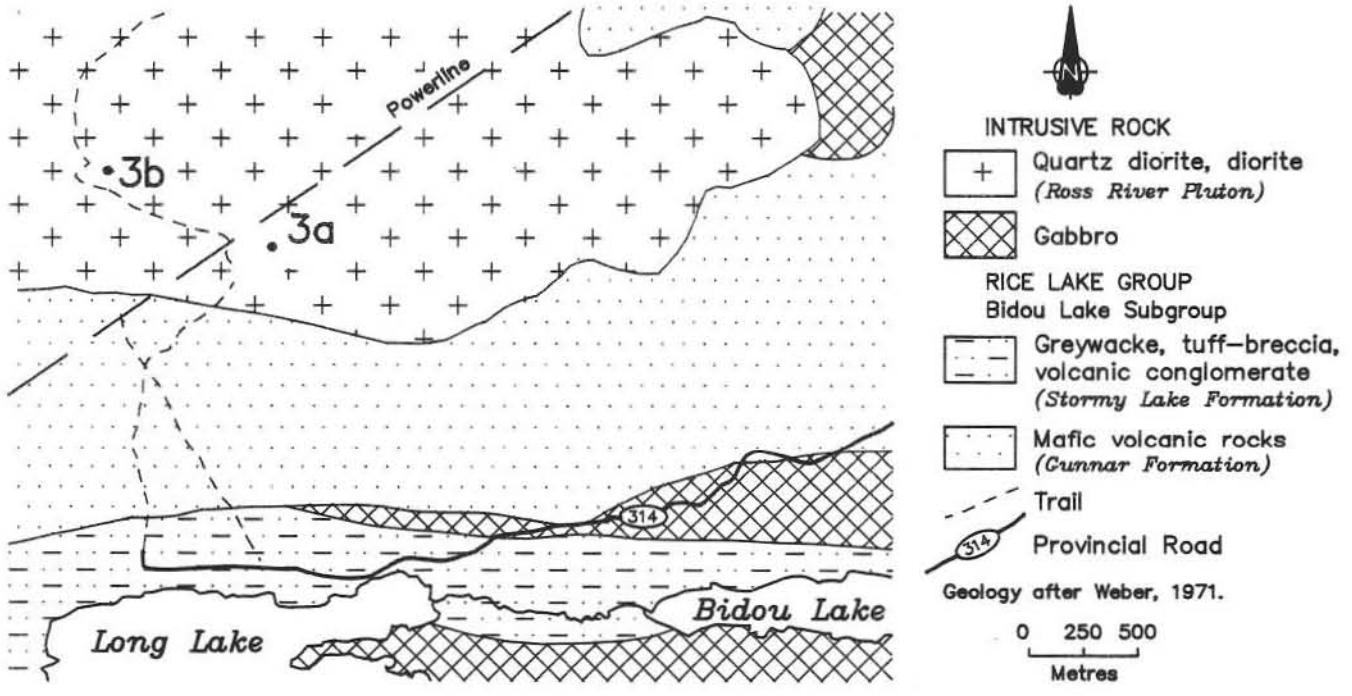


Figure 3-1: Geological setting of occurrences 3a (Ogama), 3b (Rockland) and 5 (Onondaga).

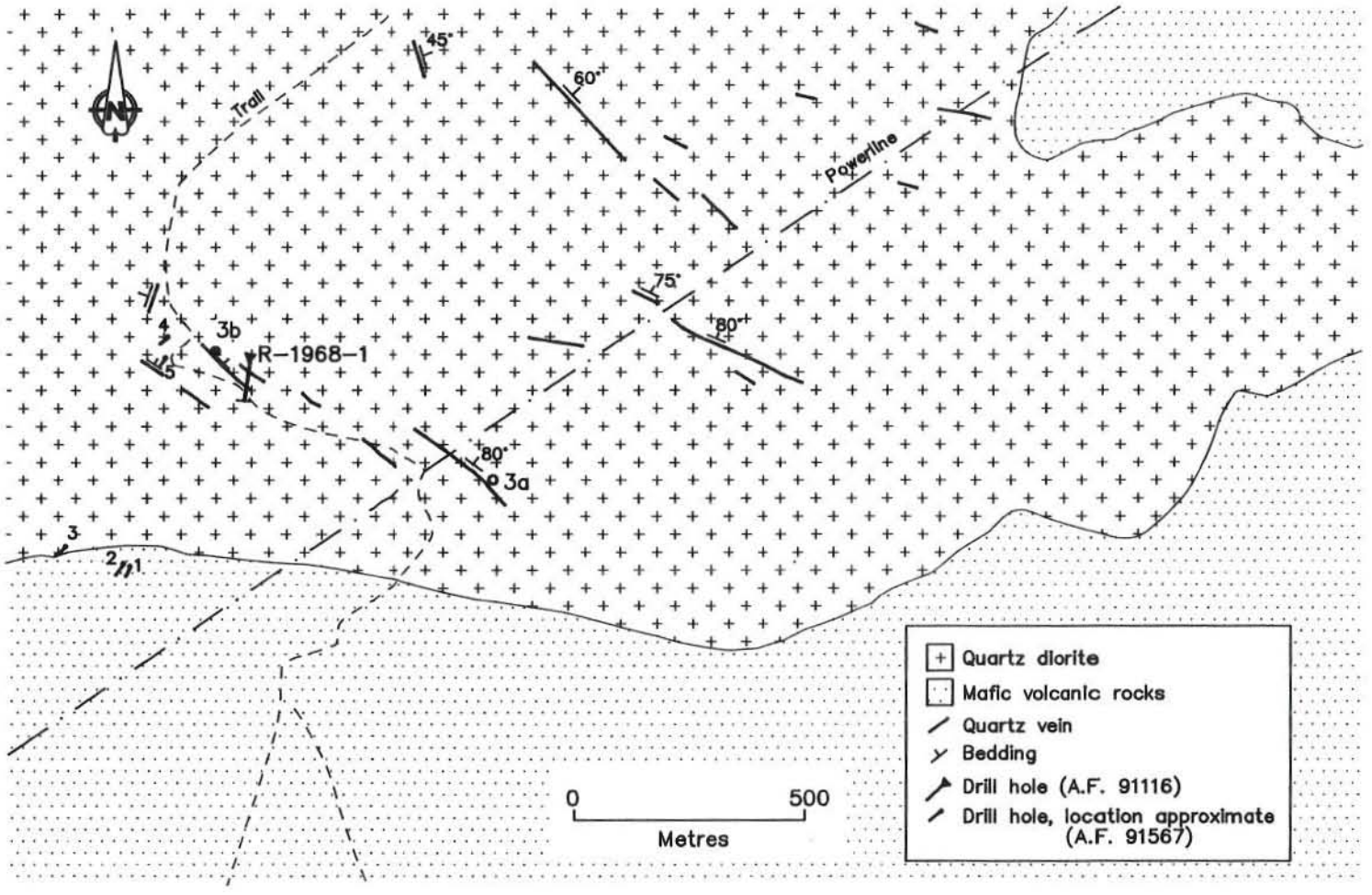


Figure 3-2: Location of quartz veins and drill holes at occurrence 3.

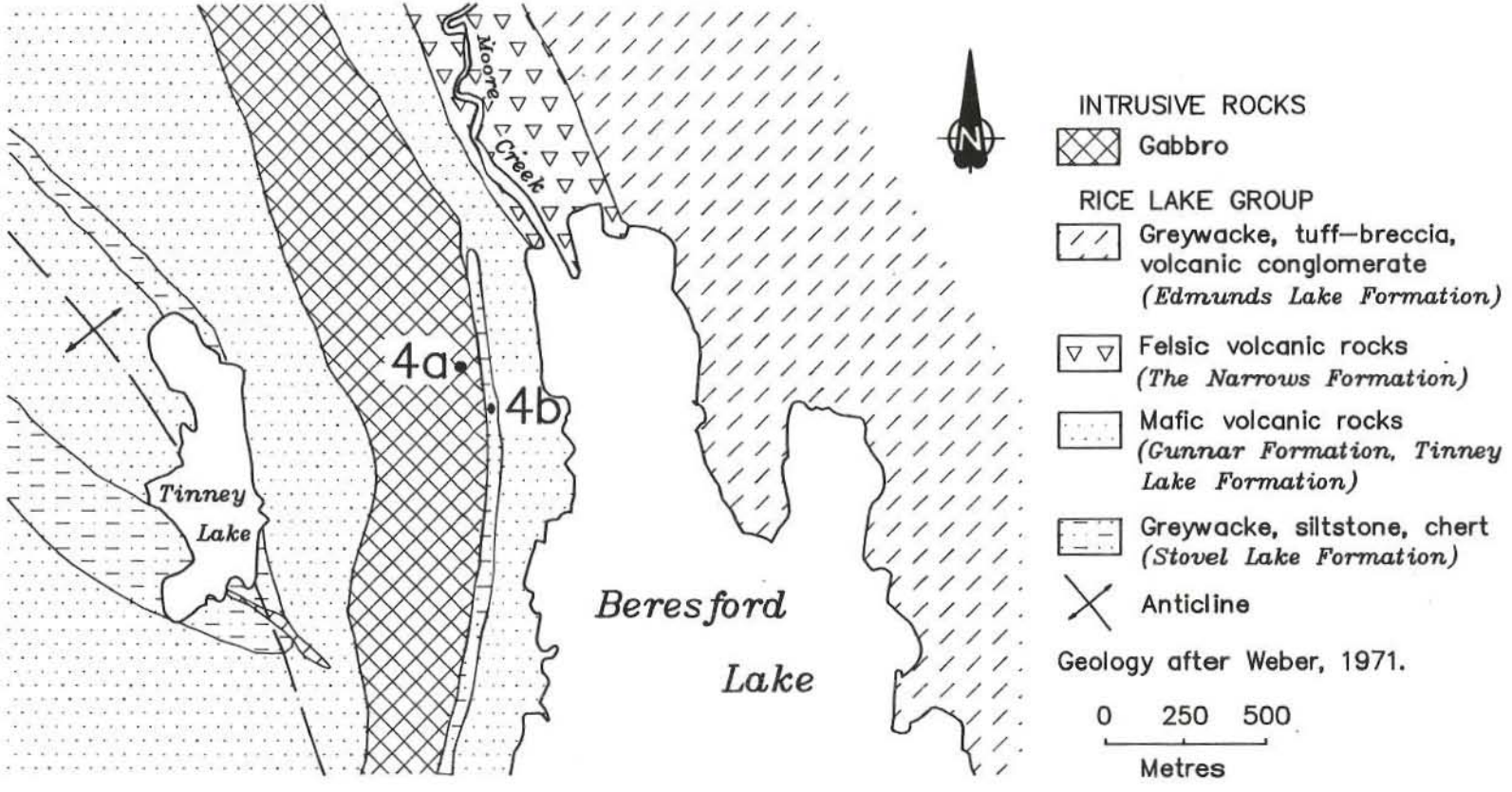


Figure 4-1: Geological setting of occurrence 4; Oro Grande (4a), Solo (4b).

LOCATION: 4

NAME: ORO GRANDE-SOLO

UTM: Oro Grande. 5639224N/341854E
Solo. 5639200N/341780E

ACCESS: Via boat to north end of Beresford Lake;
Oro Grande. Traverse 325 m west along cut line to old minesite.
Solo. Traverse 200 m west along cut line and 100 m south to old minesite.

AREA: 300 m west of northern Beresford Lake.

AIRPHOTO: A24709-174

EXPLORATION SUMMARY:

The occurrence was first described by Wright (1932). The history of exploration and development at location 4 is detailed in Mineral Inventory Card 52L/14 Au7. Location 4 was first recorded as the Oro Grande claim by D.E. Smith in 1919 and the Solo claim by R.H. Little in 1923. A.D. Miles optioned the claims for Anglo-Canadian Explorers Limited in 1923-24. Mine development carried out from 1924 to 1926 included a 43 m shaft (Solo shaft) with crosscuts and drifts, a 15 m prospect shaft (Oro Grande shaft), and an unknown amount of diamond drilling. Operations ceased in 1926 and the mine buildings and equipment were moved to the Kitchener vein at the Central Manitoba Au minesite (location 1). In 1926 the Solo claim was assigned to Solo Mining Company, 75% owned by Central Manitoba Mines Limited. Oro-Grande Mines Limited was formed and optioned the Oro Grande and Solo claims in 1927. In 1928 Oro-Grande Mines Limited carried out development work, including deepening both shafts, but discontinued their option. Oro-Grande Development Company Limited optioned the Oro Grande claim in 1932 and installed a 3 tonne/day mill to process rock extracted during development work: 715 g Au were recovered from the first 11 tonnes. In 1933 the Oro Grande shaft was deepened to 78 m and connected underground to the Solo shaft on the 38 m level; a 68 tonne/day mill was installed, but operations ceased in 1934. From 1932 to 1934, 8.85 kg Au and 1340 g Ag were extracted from 710 tonnes of ore. Beresford Lake Mines Limited conducted further mine development in 1936-37. J.D. Shannon leased the property as a salvage operation from 1937 to 1939, extracting approximately 9000 tonnes of rock. From 1938 to 1940, 156.15 kg Au and 15 kg Ag were produced. In 1940 Beresford Lake Mines Limited carried out prospecting, diamond drilling, and mine development on a separate zone 195 m north of the Oro Grande shaft. The leases on the two claims were cancelled in 1950.

The Oro Grande and Vault 2 (formerly Solo) claims were restaked in 1960 and assigned to A. VanderBrink. Central Manitoba Mines Limited optioned the property in 1962, and conducted an exploration program including linecutting, prospecting, 1:2400 geological mapping, 15 hole diamond drill program totalling 1116 m (A.F. 91399) and an EM survey (A.F. 91347). The Oro Grande claim was cancelled in 1966; the Vault 2 claim was cancelled in 1973.

M. Linnell staked the ground in 1978 and optioned it to Highmark Resources Limited in 1984. Highmark Resources Limited and Homestead Resources Incorporated began a joint venture exploration program including VLF-EM and magnetometer surveys, soil and tailings sampling, and prospecting.

GEOLOGICAL SETTING:

The area is underlain by gabbro, and Rice Lake Group mafic and felsic volcanic rocks and greywacke. These rocks occur along the northeast limb of a regional anticline (Fig. 4-1). Gabbroic-textured mafic rocks host a 2-6 m wide, 120 m long, quartz-filled shear zone that is oriented 330°/60-70°E. The gabbro lies concordantly within a sequence of mafic to intermediate flows and tuffaceous sedimentary rocks that are oriented 340°/70°E (Fig. 4-2). The host rock is rusty weathered quartz-chlorite schist with minor to trace Fe-carbonate, albite, sericite, tourmaline, leucoxene and magnetite (Stephenson, 1971; Stockwell and Lord, 1939).

MINERALIZATION:

Discontinuous quartz lenses and stringers within the Oro Grande shear zone host minor disseminated pyrite and pyrrhotite, and traces of chalcopyrite, sphalerite and visible gold (Stephenson, 1971; Stockwell and Lord, 1939). The lenses consist of fine grained, sugary, grey quartz accompanied by minor chlorite and traces of Fe-carbonate, sericite and tourmaline. The lenses are up to 0.6 m wide and >6 m long (Stockwell and Lord, 1939). Numerous short veinlets of milky white quartz with minor chlorite, biotite and pyrite crosscut grey quartz normal to the veins. Minor euhedral pyrite crystals are also present in the sheared host rock (Fedikow, 1981).

GEOCHEMICAL DATA:

A total of 165 kg Au and 16.3 kg Ag were produced from approximately 9 700 tonnes ore during 1932-34 and 1938-40 (Mineral Inventory Card 52L/14 Au7NE,NW).

Three samples were collected for Au analysis:

1) sample 80-85-94A: quartz vein, white to grey, 5-30 cm wide, containing ribbon-like inclusions of sheared wall rock; <1% pyrite; edge of Oro Grande shaft; chip sample (unknown width) - 2369 ppb Au;

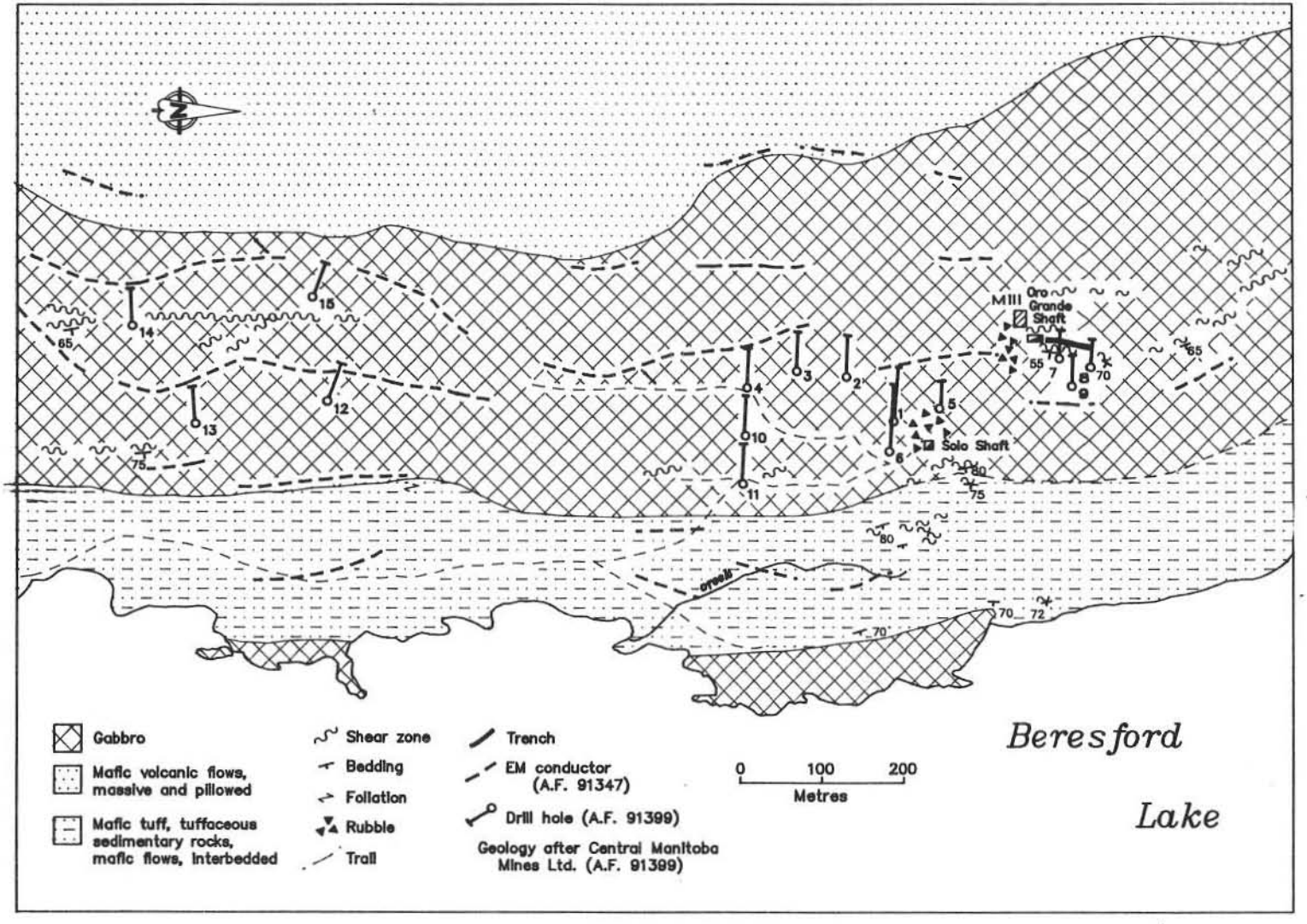


Figure 4-2: Detailed geology and drill hole locations at occurrence 4.

2) sample 80-85-94B: sheared mafic rock; up to 5% pyrite adjacent to quartz vein; edge of Oro Grande shaft; chip sample (2.25 m) - 1980 ppb Au; and
3) sample 80-85-94C: mafic host rock, massive to weakly foliated; <1% pyrite - 16 ppb Au.

Two samples were assayed for Au, Ag, Cu, Zn and Pb:

1) sample SEMBLOG 81/1/1: quartz vein with sheared chloritic wall rock; trace pyrite - 0.7 g/t Au, trace Ag, trace Cu, nil Zn, trace Pb; and
2) sample SEMBLOG 81/1/2: sheared wall rock with quartz veins, trace pyrite - 1.0 g/t Au, 1.7 g/t Ag, trace Cu, trace Zn, trace Pb.

Drill core assays for Au are included in A.F. 91399; samples generally contained <1 g/t Au, with a maximum of 8.9 g/t Au over 0.6 m in DDH 9.

CLASSIFICATION:

Vein type deposit. Multiple auriferous quartz veins with minor sulphide mineralization occur in a shear zone in gabbroic rocks.

REFERENCES:

Assessment Files 91347, 91399
Manitoba Energy and Mines, Minerals Division.

Fedikow, M.A.F.
1981: Mineral deposit studies-Superior Province-southeastern Manitoba; **in** Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, 1981, p. 64-73.

Mineral Inventory Card 52L/14 Au7NE,NW
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

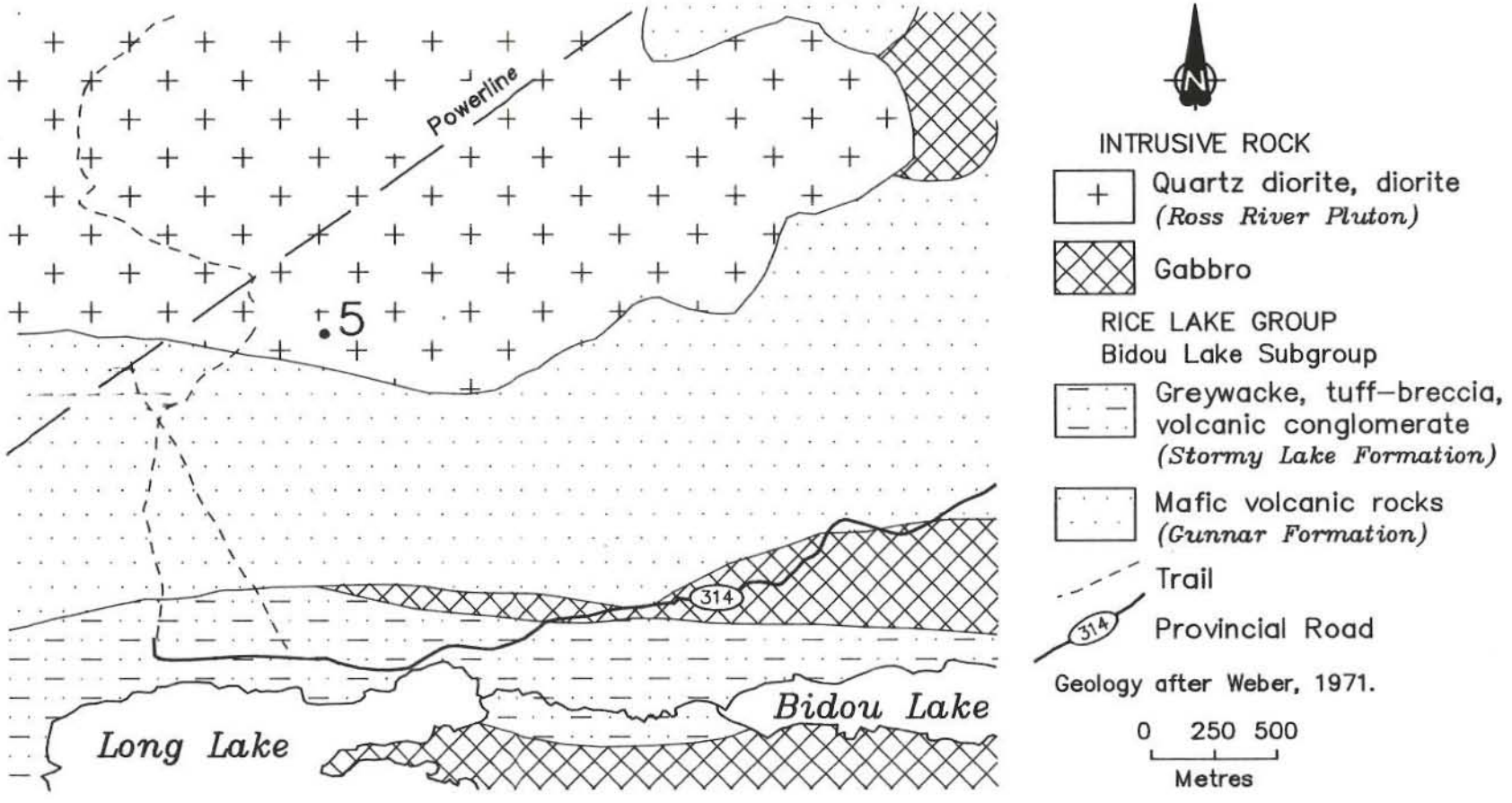


Figure 5-1: Geological setting of occurrence 5 (Onondaga) (52L/14).

LOCATION: 5

NAME: ONONDAGA

UTM: 5639054N/332693E

ACCESS: Via road to the Ogama shaft (location 3), then traverse approximately 0.45 km southeast.

AREA: North of Long Lake (Fig. 3-1).

AIRPHOTO: A24712-40

EXPLORATION SUMMARY:

The following information is summarized from Mineral Inventory Card 52L/14NW Au15.

The deposit was first recorded in 1915. In 1924, a shaft had been sunk to a depth of 30 m, where samples with up to 9223.20 g/t Au were collected. A drift was driven and a mill was erected in 1924 (Wright, 1932). In 1932 the property was assigned to Onondaga Gold Mining Company Limited. An additional mill was erected in 1932, and production eventually reached 14 tonnes/day by 1933. Production ceased about 1935; production figures are not known. In 1944 the assets of Onondaga Gold Mining Company Limited were acquired by Ogama-Rockland Gold Mines Limited. The shaft was dewatered in 1949; sampling of the old mine workings and drilling of five holes (total length unknown) were carried out in 1949-50. Ogama-Rockland Gold Mines Limited claim on the Onondaga deposit was cancelled in 1966.

Several parties held the ground between 1969 and 1976. W. Bruce Dunlop carried out linecutting and EM surveys in 1979-80. The property was assigned to Mid North Resources in 1981, and optioned to Camflo Mines Limited. Camflo Mines Limited carried out VLFEM and MAG surveys, geological mapping and geochemical sampling programs. Arbor Resources Incorporated and Angela Development Limited optioned the property from Barrick Resources Corporation (formerly Camflo Mines Limited), and carried out a drill program (details not available) in 1984.

GEOLOGICAL SETTING:

The area is underlain by quartz diorite of the Ross River Pluton, flanked to the south and east by mafic volcanic rocks of the Gunnar Formation, and to the east by gabbro (Fig. 3-1). A northwest-striking shear zone averaging 1.8 m wide and 245 m long occurs within a felsic porphyry dyke and along its contacts with pillowed mafic flows (Wright, 1932). Discontinuous, glassy, white to greyish-white quartz lenses and stringers, generally <1 m wide, occur in the shear zone (Stephenson, 1971; Wright, 1932).

MINERALIZATION:

The quartz veins contain minor pyrite and minor accessory carbonate and chlorite (Stephenson, 1971). G.B. Hall noted "abundant free gold" in 1923 (Mineral Inventory Card 52L/14NW Au15).

GEOCHEMICAL DATA:

Fifteen samples taken from the upper 6.7 m of the Onondaga shaft in 1924 returned the following analyses (Mineral Inventory Card 52L/14 Au15):

Sample No.	Au content (g/t)
A1	2.40
A2	2.74
A3	trace
A4	31.89
A5	3.09
B1	11.66
B2	0.69
HG3	5616.00

CLASSIFICATION:

Vein type deposit. An auriferous quartz-filled shear zone with minor pyrite occurs in a felsic porphyry dyke and mafic volcanic rocks.

REFERENCES:

Mineral Inventory Card 52L/14NW Au15
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

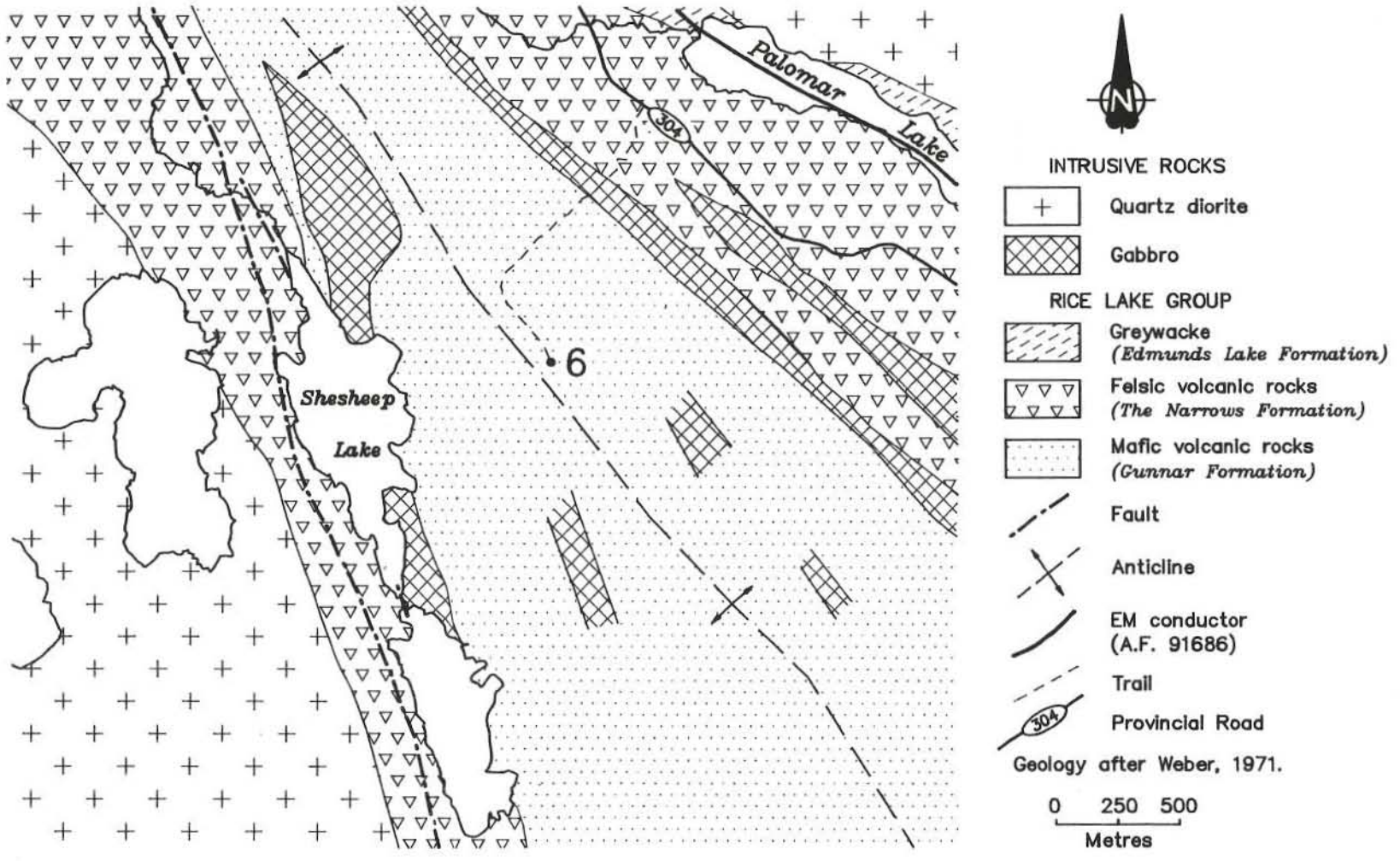


Figure 6-1: Geological setting of occurrence 6 (Cryderman).

LOCATION: 6

NAME: CRYDERMAN

UTM: 5650007N/332352E

ACCESS: Via all-terrain-vehicle or four-wheel-drive vehicle along a 1.2 km trail originating from Provincial Road 304.

AREA: Approximately 0.6 km east of Shesheep Lake.

AIRPHOTO: A24712-47

EXPLORATION SUMMARY:

The area was first recorded in 1925 by R. Cryderman. The Mining Corporation of Canada sank a 79 m shaft with levels at 38 m and 76 m in 1926, and carried out an indeterminate amount of drilling west of the shaft in 1927 (Wright, 1932). In 1928 Cryderman Mines Limited was organized and surface exploration was continued. In 1932, surface sampling, dewatering of the shaft and installation of a mill and ancillary facilities were undertaken. In that year 9.78 kg Au were produced from an unknown quantity of ore; the operation closed because it was not profitable. At least seven holes were drilled in 1937, but assay results were not released (Mineral Inventory File 52L/14 Au4). The claim was cancelled in 1963 and several parties subsequently claimed the ground. Hudson Bay Mining and Smelting Company Limited carried out an airborne EM survey over the area in 1971. Noranda Exploration Company Limited carried out VLF-EM and magnetometer surveys in 1982. Augusta Resources undertook prospecting and a four hole drill program in 1983, but transferred the property to Mid-North Resources Limited in 1985.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation massive to pillowed, feldspar-phyric mafic rocks flanked to the east and west by The Narrows Formation felsic volcanic rocks. These rocks are intruded by small fine grained mafic dykes and felsic porphyry stocks and large gabbroic bodies (Fig. 6-1). The host rocks are transected by a bifurcating shear zone up to 9 m wide oriented 305°/58-78°SW (Fig. 6-2). The shear zone is characterized by intense foliation, chloritization and quartz±carbonate veining. Foliation planes are locally curved and commonly disrupted by discordant quartz lenses. The shear zone contains 20-30%, white to grey and, locally, black quartz veins, lenses and ribbons. Quartz lenses are generally 1-2 m thick, but locally are up to 3 m thick, and generally are not greater than 5 m long. Quartz ribbons are up to 5 cm thick and are continuous for up to 10 m along strike. Fragments, elongated lenses and sheets of chloritized wall rock occur as inclusions in the quartz.

MINERALIZATION:

Minor disseminated pyrite, pyrrhotite and trace chalcopyrite are randomly distributed in the quartz lenses. Wright (1932) reports "coarse particles of free gold" along cracks in some of the wider lenses of quartz. Stephenson (1971) noted traces of visible gold and Au-tellurides in the veins, as well as minor carbonate, chlorite, sericite and tourmaline. The sheared host rock contains minor amounts of pyrite (Fedikow, 1981).

GEOCHEMICAL DATA:

Surface sampling of the main vein by Cryderman Mines Limited in 1937 yielded 19.2 g/t Au over an average width of 1.01 m along 80 m strike length; to the northeast, a 67 m long shoot averaged 17.9 g/t Au over a 0.64 m width (Mineral Inventory File 52L/14 Au4).

Rock samples were collected by Manitoba Energy and Mines geologists in 1985; results of Au analyses are given in Table 6-1, and sample locations are shown in Figure 6-2.

CLASSIFICATION:

Vein type deposit. A shear zone transecting mafic volcanic rocks contains auriferous quartz lenses with minor pyrite and trace chalcopyrite.

REFERENCES:

Assessment File 91686
Manitoba Energy and Mines, Minerals Division.

Fedikow, M.A.F.
1981: Mineral deposit studies-Superior Province-southeastern Manitoba; in Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, 1981, p. 64-73.

Table 6-1: Au contents in rock samples from occurrence 6

Sample No.	Sample Type	Description	Au content
85-23A	2 m long chip sample	quartz vein (1% py)	713 ppb
85-24C	chip sample	dark green vein inclusion	<12 ppb
85-24D	grab sample	quartz rubble, 1% cp	1.2 g/t

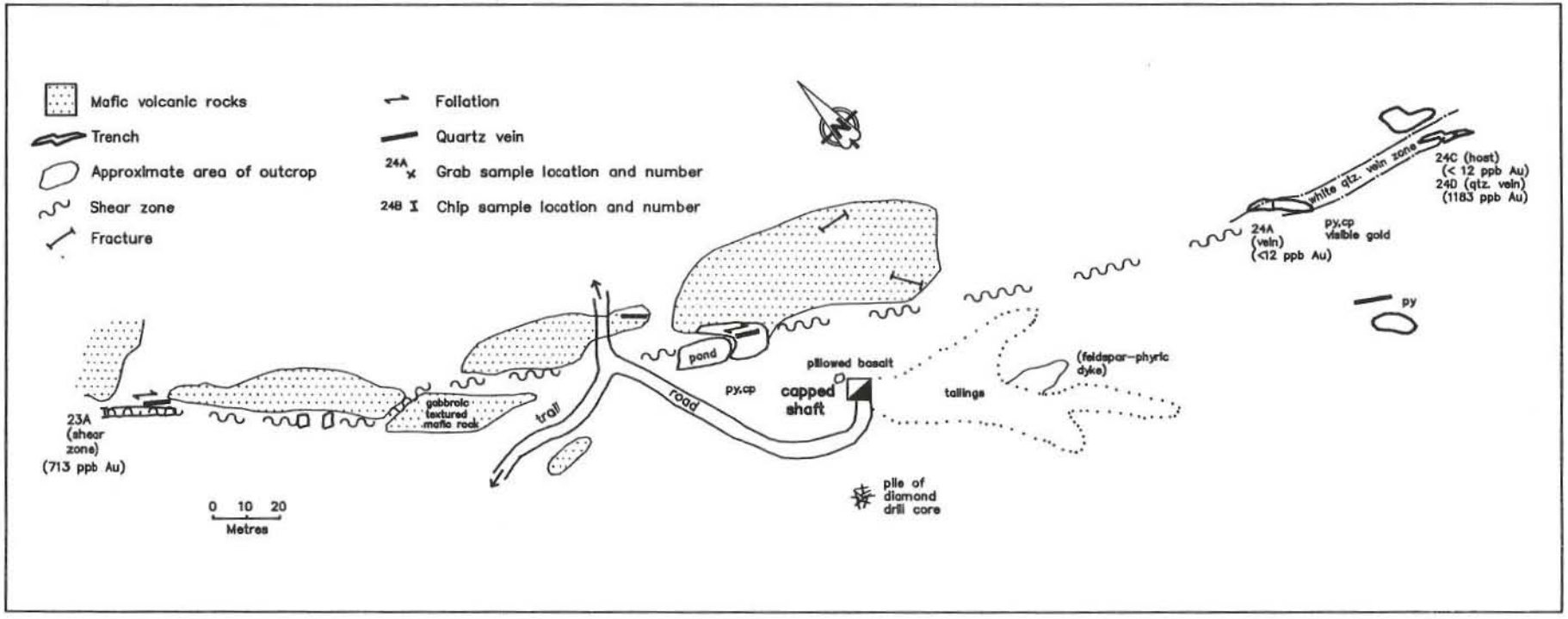


Figure 6-2: Detailed geology at occurrence 6.

Mineral Inventory Card 52L/14 Au4
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P. W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

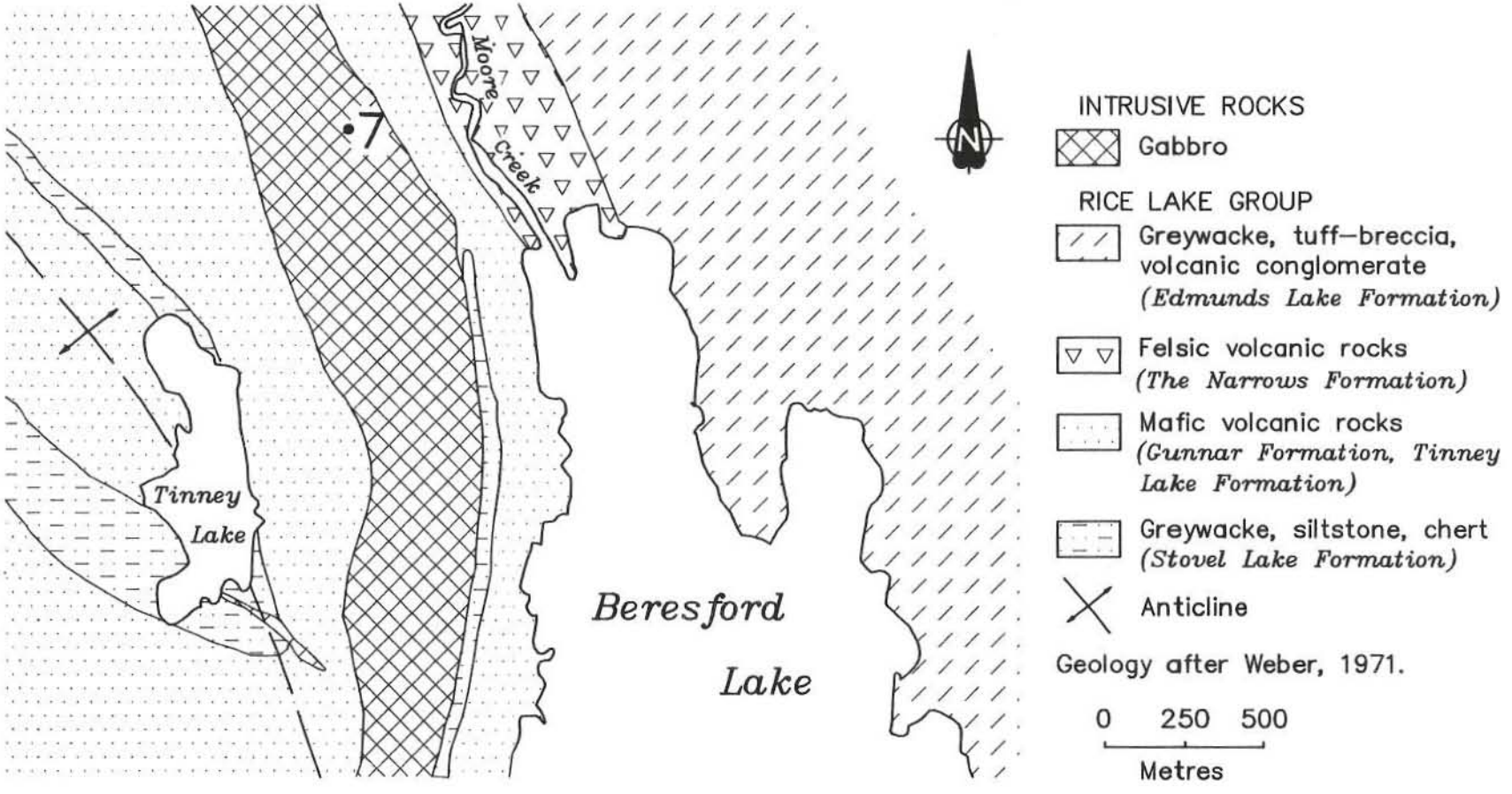


Figure 7-1: Geological setting of occurrence 7 (Mandalay).

LOCATION: 7

NAME: MANDALAY

UTM: 5639989N/341289E

ACCESS: Via boat on Beresford Lake and Moore Creek, then traverse approximately 0.4 km west of Moore Creek.

AREA: Northwest of Beresford Lake.

AIRPHOTO: A24709-174

EXPLORATION SUMMARY:

The area was staked in 1919 by O.J. Quesnel. Trenching and pitting in 1934 exposed a mineralized quartz vein. A 15 m exploration shaft was sunk in 1935 and approximately 470 m of diamond drilling were completed in 1936 (Mineral Inventory Card 52L/14 Au8). The property remained dormant from 1937 until its cancellation in 1959. Numerous parties subsequently claimed the ground. Esso Resources Canada Limited acquired the property in 1980 and conducted mapping and sampling programs. In 1984, a prospecting program, VLFEM, magnetometer and geochemical surveys were done by Homestead Resources Incorporated in joint venture with Highmark Resources Limited.

GEOLOGICAL SETTING:

The area is underlain by gabbro, flanked to the east and west by a poorly exposed sequence of fine grained mafic (basaltic?) volcanic rocks of the Gunnar and Tinney Lake formations (Fig. 7-1). Quartz-bearing shear zones characterized by intense foliation and accompanied by carbonatization and chloritization occur predominantly in the gabbroic rocks and, to a lesser extent, in fine grained mafic volcanic and accompanying sedimentary rocks. The shear zones are parallel to stratigraphy at 335°/55-80°E. White or bluish quartz lenses within the shear zones range from a few centimetres to 1.5 m thick.

The "Mandalay Shear Zone", 12 m thick and 0.85 km long, occurs at the contact between coarse grained gabbroic rocks and sedimentary rocks (Stockwell and Lord, 1939). A trench (10 x 8 x 5 m) exposes massive, locally foliated, coarse grained gabbroic rock with several 10-20 cm thick quartz veins parallel to the foliation (Stewart, 1985).

MINERALIZATION:

Minor (≤2%) pyrite is disseminated in the wallrocks of the shear zones. Quartz veins are generally barren of sulphide minerals.

Stephenson (1971) reports that quartz and wallrocks of the main shear are poorly mineralized with pyrite and pyrrhotite.

GEOCHEMICAL DATA:

Drill core assays from the "Mandalay Shear Zone" were reported to have low Au concentrations with the exception of samples from one hole that returned 10.2 g/t Au over approximately 6 m, including a 1.5 m zone assaying 20.5 g/t Au (Stockwell and Lord, 1939).

A 2 m chip sample of rusty fine- to coarse-grained mafic volcanic rock containing 1-2% disseminated pyrite returned <12 ppb Au.

CLASSIFICATION:

Vein type deposit. An array of auriferous shear zones hosting multiple quartz lenses occur in gabbroic and mafic volcanic rocks.

REFERENCES:

Mineral Inventory Card 52L/14 Au8
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

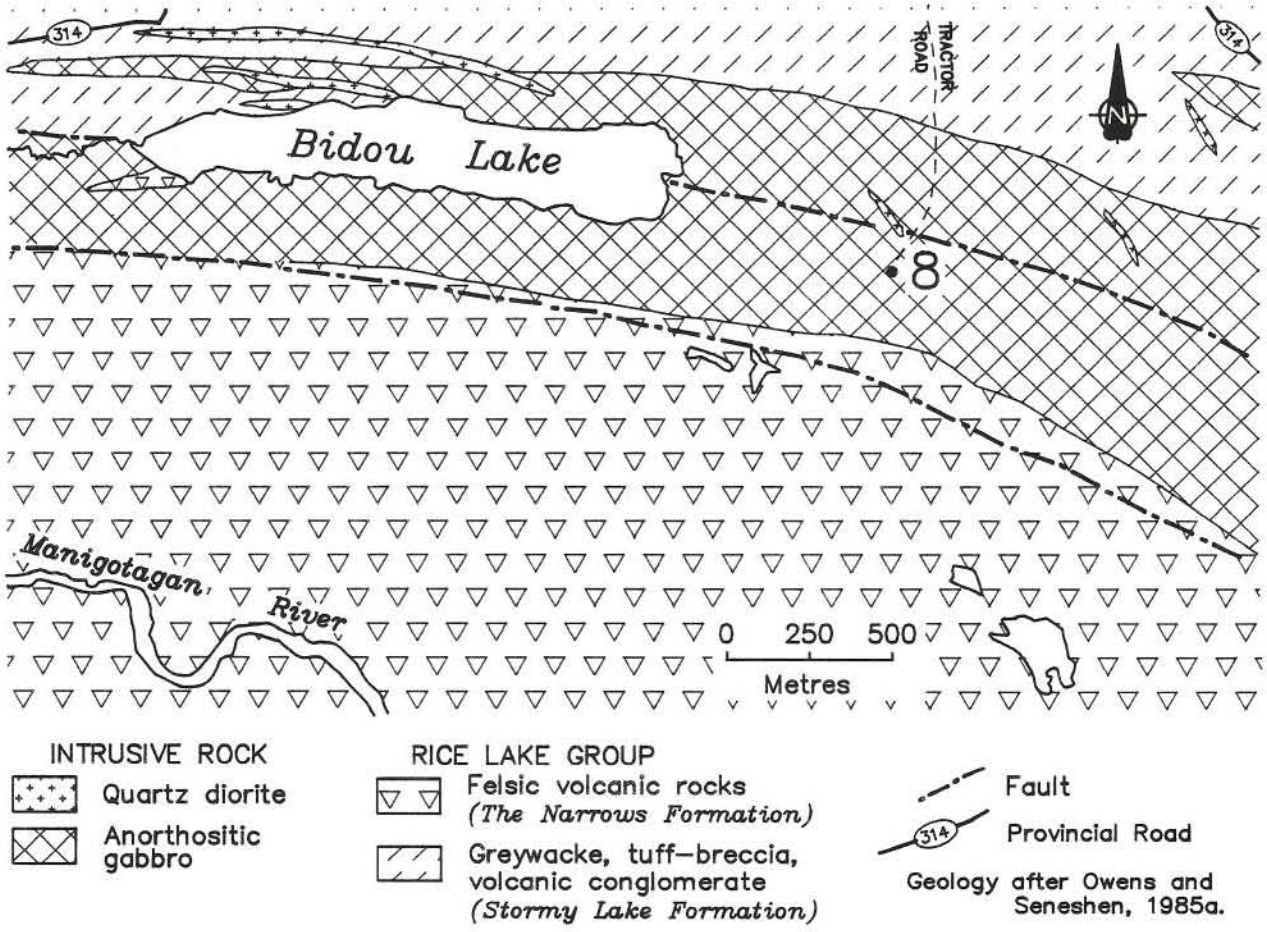


Figure 8-1: Geological setting of occurrence 8 (Mirage).

LOCATION: 8

NAME: MIRAGE

AREA: Approximately 0.7 km east-southeast of Bidou Lake (Fig. 81).

UTM: 5637704N/336284E

AIRPHOTO: A24670-102

ACCESS: By a tractor road originating from Provincial Road 314 approximately 0.5 km east of the intersection with Provincial Road 304.

EXPLORATION SUMMARY:

G.W. Meade and C. Hodgins staked the Mirage and Mirage No. 1 claims in 1924. A 9 m exploration shaft was sunk and channel samples were collected in 1928. A total of 44 pits and trenches had been opened by 1929, defining a quartz-bearing shear zone approximately 0.5 km long. The claims were cancelled in 1936, and restaked in 1937 by O.J. Quesnel. J.H. Morgan carried out a 1:2400 geological mapping on the Mirage claim group in 1940 (A.F. 92532). The Mirage No. 1 claim was cancelled in 1967 and the Mirage claim was cancelled in 1976. Esso Resources Canada Limited acquired the property in 1978 and conducted an exploration program including prospecting, mapping, sampling and trenching in 1980-81 followed by approximately 2 km^2 of overburden stripping during 1986 and 1987.

GEOLOGICAL SETTING:

The area is underlain by a grey-green, fine- to medium-grained massive feldspar-phyric volcanic(?) rock described as talc-serpentine schist by Russell (1952) and mapped as anorthositic gabbro (Fig. 8-1) by Owens and Seneshen (1985). This rock is intruded by minor quartz diorite dykes, and is flanked to the north by Stormy Lake Formation sedimentary rocks and to the south by The Narrows Formation felsic volcanic rocks. Several east- and northeast-striking shear zones dipping steeply to the north transect the rocks (Fig. 8-2). The shear zones are foliated and rusty weathered; adjacent rocks are silicified, carbonatized and sericitized. Most shear zones contain 10-20 cm thick, 1-5 m long, discontinuous, Fe oxide stained quartz lenses. The two most prominent shear zones are oriented 280°/40-70°N (Wright, 1932). The northernmost shear zone is at least 140 m long and is occupied by a virtually continuous quartz vein up to 2 m thick. To the south, a 15-20 m thick shear zone exposed over approximately 100 m strike length is characterized by intense silicification of the foliated rock and contains comparatively small but numerous milky white quartz lenses, 2-5 cm thick and up to 1 m long.

MINERALIZATION:

Trace to minor pyrite, pyrrhotite and chalcopyrite are disseminated in both the wall rock and quartz veins. Gold crystals are visible in milky white quartz lenses exposed on the western face of the original prospect shaft/pit. "Spectacular gold occurrences" in quartz stringers 2.510 cm thick that crosscut foliation are reported in A.F. 92532. The quartz veins contain accessory chlorite, Fe-carbonate, serpentine, fuchsite, tourmaline, and an unidentified asbestiform mineral (Stephenson, 1971; A.F. 92532).

GEOCHEMICAL DATA:

Eight channel samples collected in 1928 yielded nil to 1.7 g/t Au, nil Ag and nil Cu. An unknown number of additional channel samples also taken in 1928 contained 1.7-109.7 g/t Au. More than 90 samples collected from 44 trenches in 1929 contained <3.4 g/t Au with the exception of a quartz lens at the shaft that contained Au with "commercial grade" (Mineral Inventory Card 52L/14 Au3).

Four rock samples were analyzed for Pt, Pd and Au; two samples are characterized by elevated Pd and Au concentrations (Table 8-1; Fig. 8-2; Theyer. 1988).

Table 8-1: Assay results for samples from location 8.

Sample No.	Description	Pt	Pd	Au (ppb)
51-8-1	chip; quartz vein; barren	<10	<2	2
51-8-2	chip; quartz vein; barren	<10	<2	4
51-8-3	chip; quartz vein; barren	<10	10	43
51-8-4	chip; quartz vein; 1% py	20	300	6900

CLASSIFICATION:

Vein type deposit. Multiple shear zones containing discontinuous auriferous quartz veins and minor pyrite occur in mafic volcanic or gabbroic rocks.

REFERENCES:

Assessment File 92532
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 52L/14 Au3
Manitoba Energy and Mines, Minerals Division.

Owens, D.J. and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Map 1985R-1, 1:10 000.

Russell, G.A.
1952: Structural studies of the Long Lake-Halfway Lake area, Rice Lake Mining Division;

Manitoba Mines and Natural Resources, Mines Branch, Publication 496, 10p.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Theyer, P.
1988: Platinum group elements investigations; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1988, p. 158-160.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

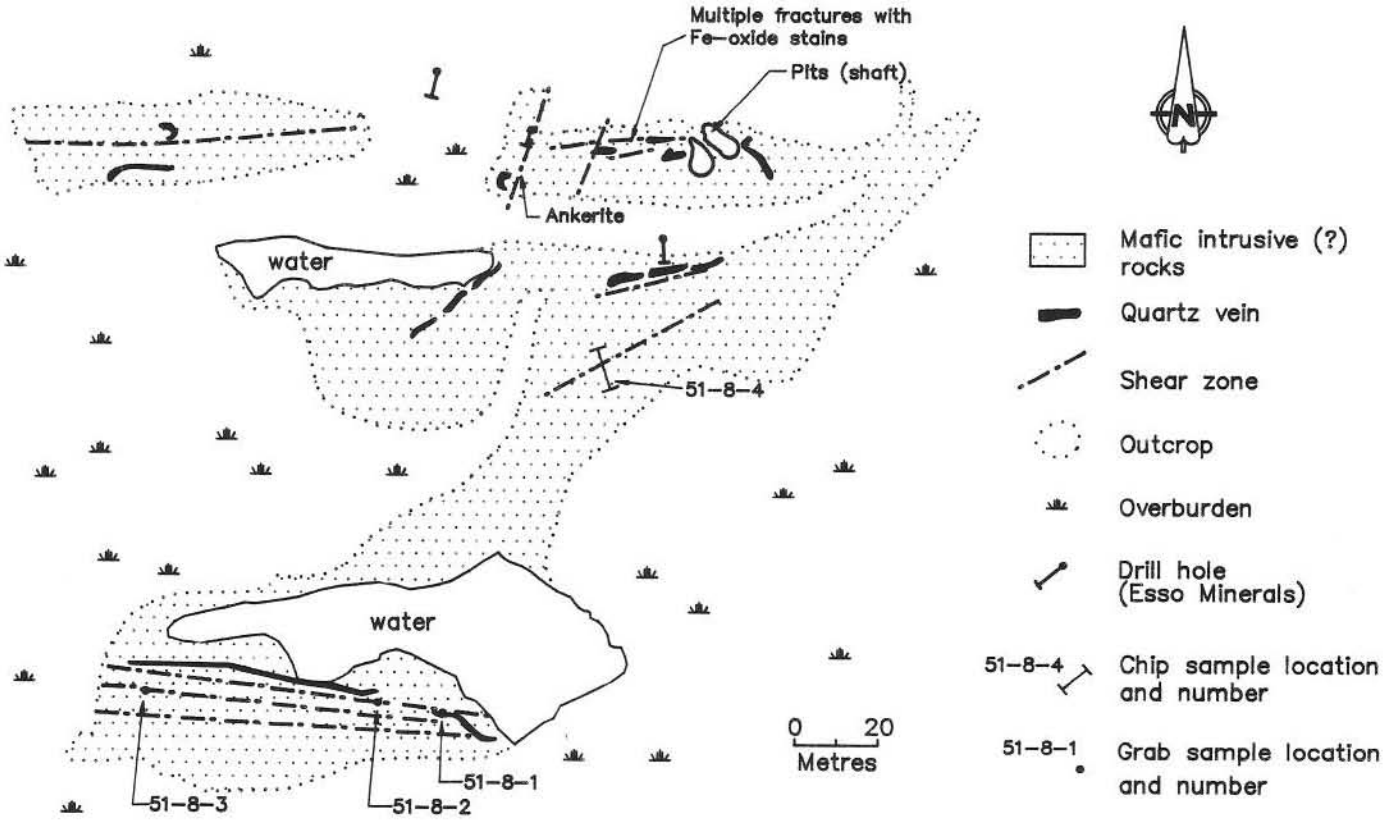


Figure 8-2: Detailed geology and sample locations at occurrence 8 (Mirage).

LOCATION: 9

NAME: MOORE LAKE SHAFT

UTM: 5647977N/334859E

ACCESS: Via Provincial Road 304, approximately 5.1 km southeast of the entrance to the Wallace Lake access road.

AREA: 550 m west of Mabel Lake.

AIRPHOTO: A24710-44

EXPLORATION SUMMARY:

Moore Lake Mines Limited carried out surface work and sank a 12 m prospect shaft within a large block of claims that includes location 9 in 1928 (Wright, 1932). Manitoba Mineral Resources Limited conducted an airborne EM survey over the area in 1972 (A.F. 91692). Hans Steinleiter carried out prospecting and pitting on claim Sun 5 in 1974-75 (A.F. 92073).

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation mafic volcanic rocks, flanked to the northeast by The Narrows Formation felsic volcanic rocks, and to the west by Dove Lake Formation sedimentary rocks; gabbroic bodies are locally adjacent to the mafic volcanic rocks (Fig. 9-1). The host rocks are fine grained, medium green-grey, massive to strongly foliated chloritic volcanic rocks. Stephenson (1971) reported pillows within this unit. A shear zone striking 300-320° with a steep to moderate northeast dip is 1-3 m wide and traceable for over 250 m. Mafic volcanic rocks within the shear zone are altered to chlorite schist and are crosscut by white to brown quartz-carbonate veins (Fig. 9-2). The quartz veins are white or grey, contain chloritic wall rock inclusions and vary from <5 cm to 1 m in thickness. Foliation within the shear zone increases in intensity towards the margins of quartz veins, but quartz lenses locally disrupt foliation.

Several small discontinuous shear zones and quartz veins occur within and adjacent to a plagioclase-phyric felsic dyke. An area of very fine grained, light green-grey, siliceous rock that is similar to the quartz-feldspar porphyry dyke at location 16 (Midway) is represented in the southern part of Figure 9-2. Within this area, shear textures and bulbous discontinuous quartz veins, <40 cm thick, are exposed in trenches.

MINERALIZATION:

Up to 5% pyrite and rare chalcopyrite are disseminated within the shear zone adjacent to quartz veins and in chloritic inclusions. Less than 2% pyrite is disseminated in the light green-grey sericitized carbonatized rock in the southern set of trenches. Wright (1932) reports "free gold" associated with local areas of quartz.

GEOCHEMICAL DATA:

Analyses of rock samples from trenches at location 9 are shown in Table 9-1 and Figure 9-2.

Sample number SEMWLML81/1/1, taken near the shaft from sheared mafic volcanic rocks with white quartz and brown carbonate veining, contained nil Au, nil Ag, 0.02% Cu, 0.02% Zn and trace Pb.

CLASSIFICATION:

Vein type deposit. Auriferous shear zones with discontinuous quartz lenses and minor pyrite occur in mafic volcanic rocks and a feldspar porphyry dyke.

REFERENCES:

Assessment File 91692, 92073
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

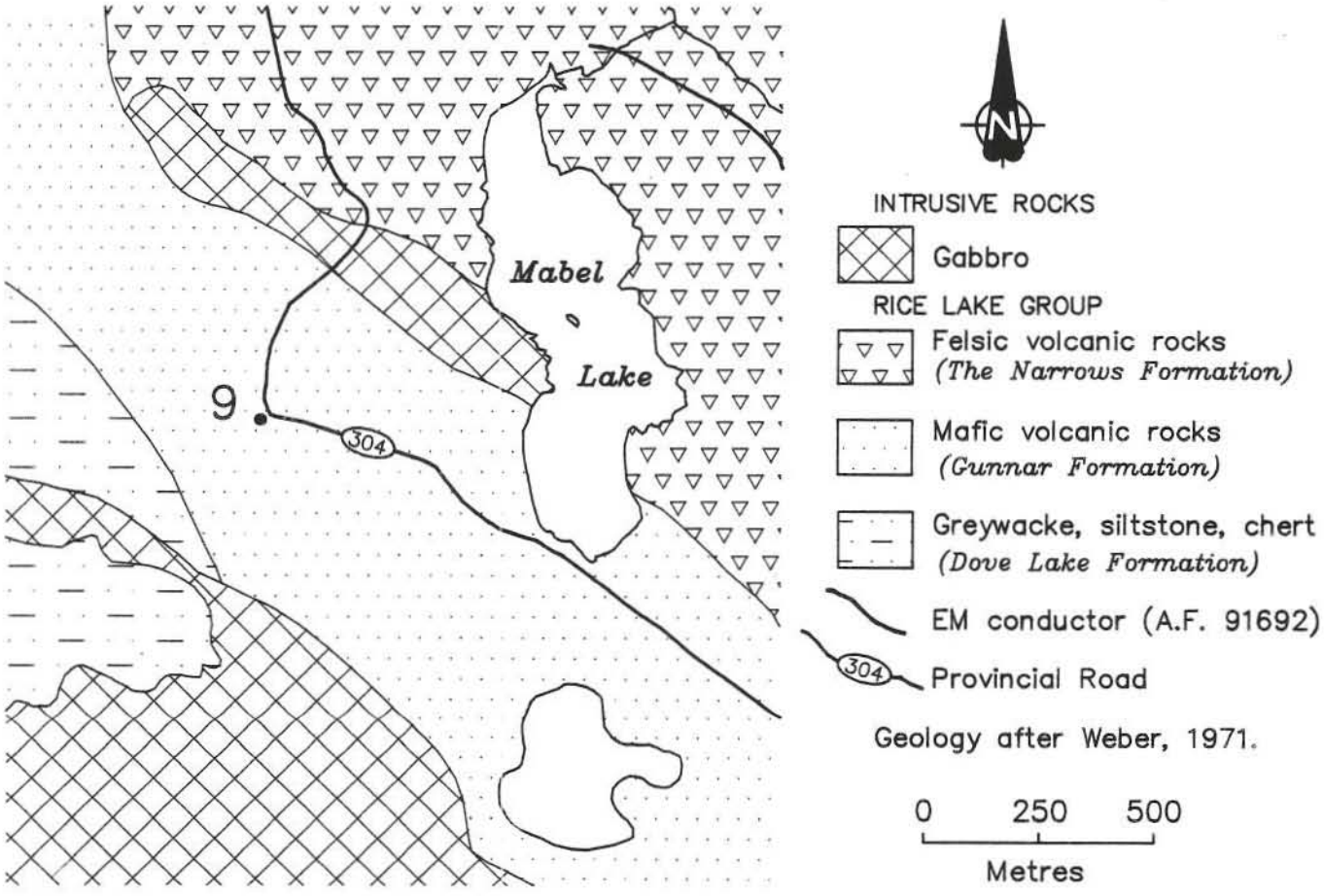


Figure 9-1: Geological setting of occurrence 9.

Table 9-1: Au contents in samples from occurrence 9

Sample No.	Sample Type	Rock Type	Mineralization	Au content
Sample 12A	chip length unknown	white quartz vein, cream coloured carbonate and chloritic inclusions with radiating clusters of tremolite	local minor py, cp, fuchsite	21.6 g/t
Sample 12B	grab	medium- to dark-green foliated mafic volcanic rock with small quartz-carbonate veinlets	<1% py and cp	57 ppb
Sample 12C	grab	v.f.g., light grey to dark green silicified mafic volcanic rock with radiating amphiboles	<1% py	91.5 g/t
Sample 13A	2 m chip	mafic host rock and quartz vein; <5 cm wide, bulbous quartz veins with chloritic inclusions;	minor f.g.-c.g. diss. py and local tr. cp in wall rock and, to a lesser degree, in quartz veins	34 ppb
Sample 14A	grab	f.g., light to medium grey-green, foliated, plagioclase-phyric siliceous rock; <5 mm quartz veinlets, carbonate common on foliation planes	1% f.g.-m.g. diss. py	119 ppb (duplicate: 12 ppb)
Sample 15A	4 m chip	dark green, well foliated mafic volcanic rock with white quartz carbonate veinlets	<1% diss. py	<12 ppb
Sample 15B	5 m chip	moderately to strongly foliated, brown-grey plagioclase-phyric sericitic carbonatized siliceous rock with <5 mm white quartz veinlets	1%, f.g.-m.g. diss. py	<12 ppb
Sample 16A	3.5 m chip	light- to medium-grey, fine grained felsic dyke	<1% py	<12 ppb
Sample 17A	4.5 m chip	moderately to strongly foliated, brown-grey sericitic carbonatized siliceous rock; minor quartz-carbonate veinlets	minor py	28 ppb
Sample 18A	2 m chip	quartz vein/shear zone near contact between mafic volcanic rocks and plagioclase-phyric dyke; <10 cm thick white quartz - Fe-carbonate veins	minor py in vein	45 ppb
Sample 19A	1.3 m chip	quartz vein/shear zone in mafic volcanic rock; white quartz - cream carbonate - chloritic inclusions	minor euhedral diss. py in sheared mafic rock and, to a lesser degree, in quartz	<12 ppb

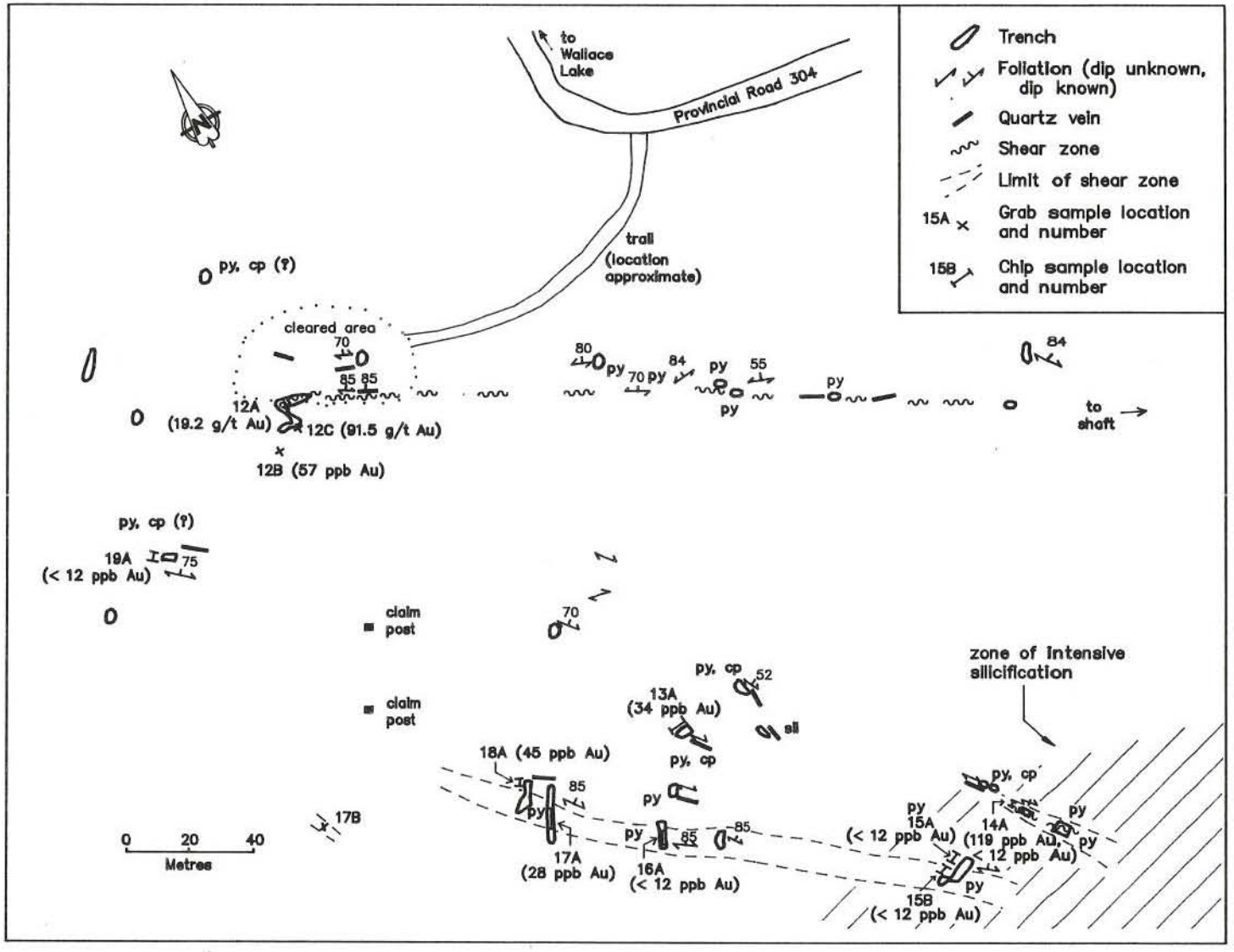


Figure 9-2: Detailed geology and sample locations at occurrence 9.

LOCATION: **10**

NAME: ELORA

UTM: 5640537N/332609E

ACCESS: Traverse 2.8 km west along a powerline from the abandoned Central Manitoba Au minesite (location 1), then 0.6 km south.

AREA: 2.5 km southeast of Halfway Lake.

AIRPHOTO: A24710-39

EXPLORATION SUMMARY:

The deposit was first recorded in 1915 by H.A. Smith as the Elora fraction. In 1916 the property was assigned to H.R. McTavish and then to A.M. Stewart. In 1922 the claim was assigned to Kingfisher Mining and Development Company Limited. In 1922 a two stamp mill was installed and 3.2 kg Au were recovered from 180 tonnes of ore taken from a 31 m long open cut (Stockwell and Lord, 1939; Mineral Inventory Card 52L/14 Au6). The property was dormant until 1934 when the property was assigned to Kingfisher Gold Mines Limited. Diamond drilling intersected a 1.45 m thick quartz vein bearing visible gold. Follow-up drilling failed to verify an extension of this vein. In 1944 the property was returned to Kingfisher Mining & Development Company Limited Numerous changes of ownership took place until the lease was cancelled in 1978.

W. Bruce Dunlop staked CB 10061 over the ground in 1978 and transferred it to Camflo Mines Limited in 1981. Geophysical, geochemical and geological surveys were carried out by Camflo Mines Limited in 1981. Camflo Mines Limited optioned the property to Angela Development Limited and Arbour Resources Incorporated. Arbour Resources Incorporated conducted a ten hole drill program in 1984. The workings consist of a pit that is >50 m long, 1-5 m wide and up to 2 m deep.

GEOLOGICAL SETTING:

The area is underlain by gabbro, flanked to the west and south by Ross River Pluton quartz diorite, to the east by Tinney Lake Formation mafic volcanic rocks and to the southeast by Dove Lake Formation sedimentary rocks (Fig. 10-1). The occurrence is hosted by very fine- to fine-grained, massive gabbroic rocks, locally with plagioclase phenocrysts (Fig. 10-2). A swarm of feldspar-phyric intermediate to felsic dykes and a minor granitic intrusion crosscut mafic volcanic rocks near the trench. A chloritized, silicified and carbonatized shear zone up to 50 cm thick and oriented 040°/80°NW contains minor lenticular remnants of milky vein quartz.

MINERALIZATION:

Wright (1932) reported lenses of quartz with arsenopyrite and free gold averaging 19.7 g/t Au in 204 tonnes. Only a small amount of quartz remains exposed in the trench. Less than 1% pyrite forms small knots within the quartz vein. Stephenson (1971) also reported accessory chalcopyrite and trace visible gold.

GEOCHEMICAL DATA:

Gold analyses for three chip samples are presented in Figure 10-2.

CLASSIFICATION:

Vein type deposit. Auriferous quartz vein with minor pyrite and arsenopyrite in a shear zone in mafic volcanic rocks.

REFERENCES:

Mineral Inventory Card 52L/14, Au6
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

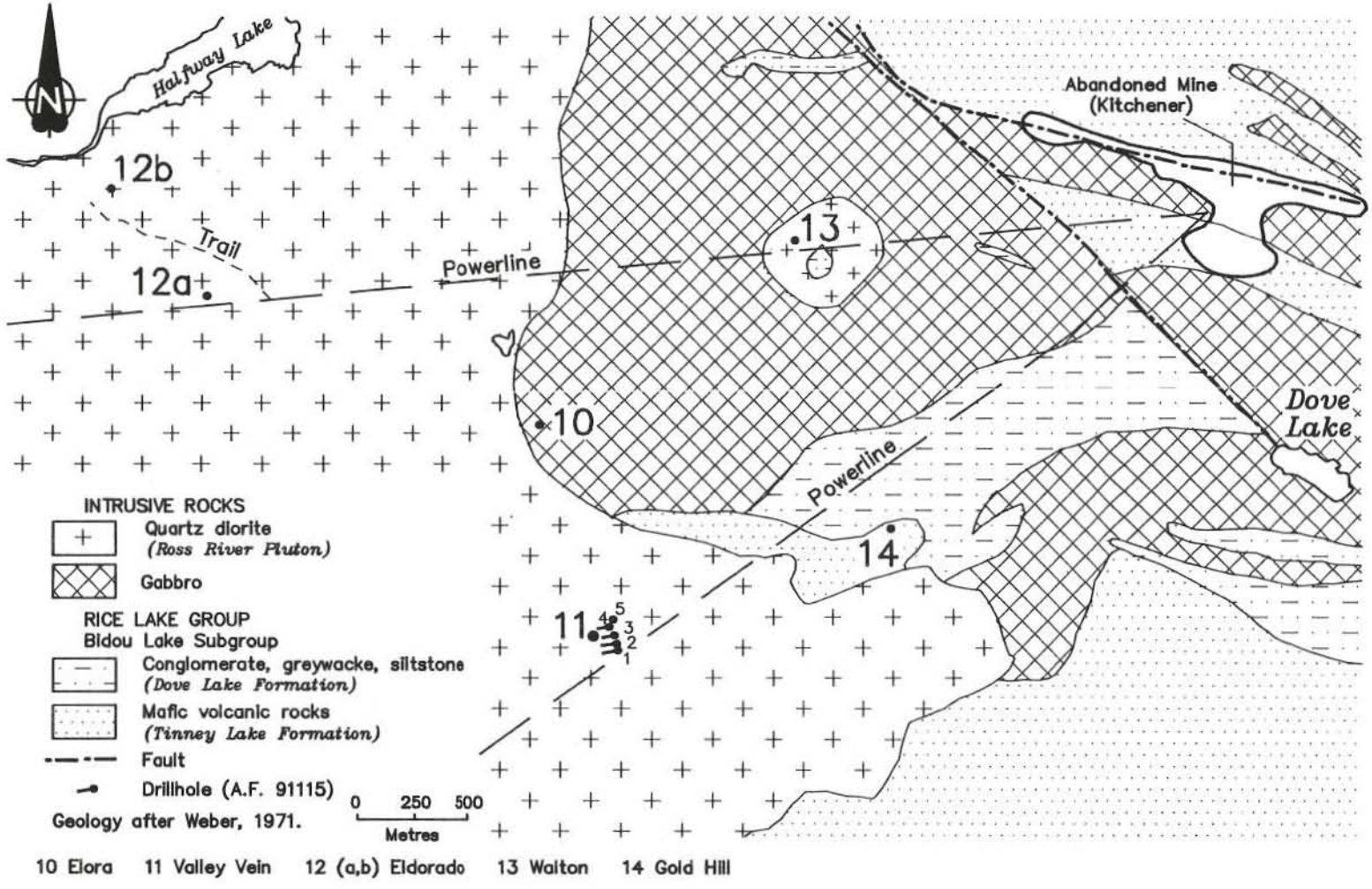
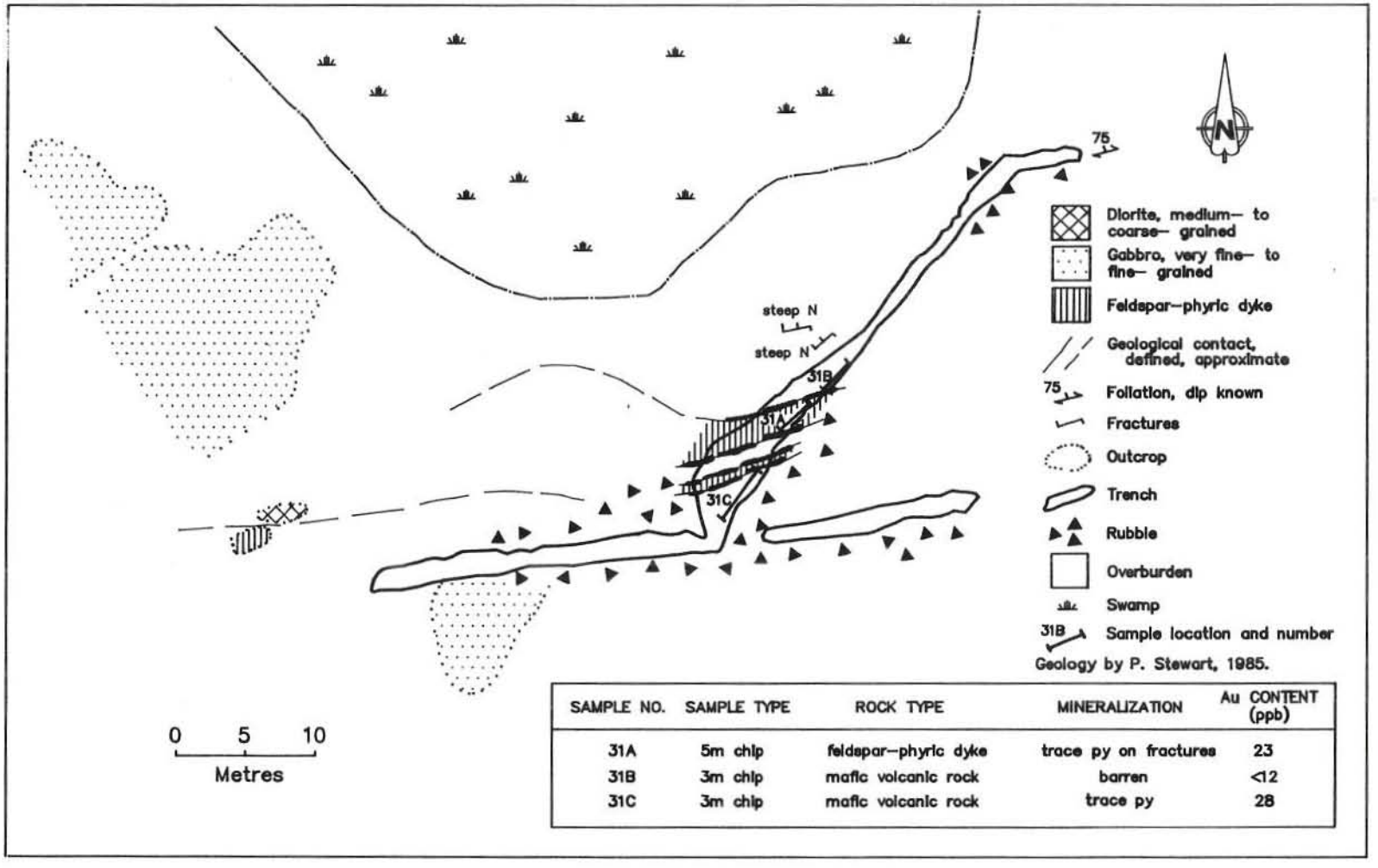
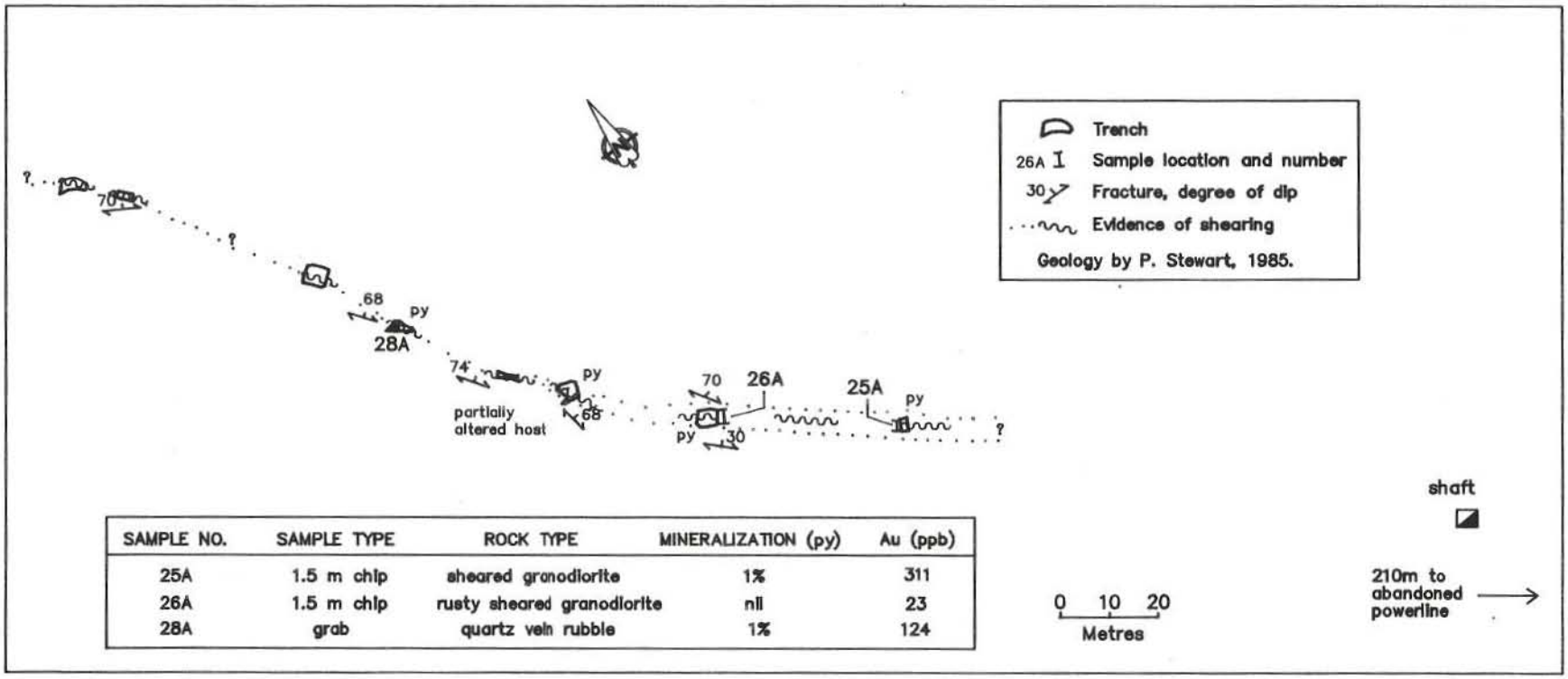


Figure 10-1: Geological setting of occurrences 10 (Elora), 11 (Valley Vein), 12 (Eldorado), 13 (Walton) and 14 (Gold Hill).



SAMPLE NO.	SAMPLE TYPE	ROCK TYPE	MINERALIZATION	Au CONTENT (ppb)
31A	5m chip	feldspar–phyric dyke	trace py on fractures	23
31B	3m chip	mafic volcanic rock	barren	<12
31C	3m chip	mafic volcanic rock	trace py	28

Figure 10-2: Detailed geology and sample locations at occurrence 10 (Elora).



SAMPLE NO.	SAMPLE TYPE	ROCK TYPE	MINERALIZATION (py)	Au (ppb)
25A	1.5 m chip	sheared granodiorite	1%	311
26A	1.5 m chip	rusty sheared granodiorite	nil	23
28A	grab	quartz vein rubble	1%	124

Figure 11-1: Detailed geology and sample locations at occurrence 11 (Valley Vein).

LOCATION: 11

NAME: VALLEY VEIN

UTM: 5639833N/332696E

ACCESS: Traverse 0.6 km northeast along an abandoned powerline from the Ogama shaft (location 3) and then 100 m north.

AREA: 3.3 km southeast of Halfway Lake (Fig. 10-1).

AIRPHOTO: A24710-39

EXPLORATION SUMMARY:

The occurrence was first described by Stockwell and Lord (1939). The history of exploration and development for location 11 is detailed in Mineral Inventory Card 52L/14 Au16. The area was first recorded as the Valley Vein claim in 1915 by A.M. Stewart. The property was assigned to Kingfisher Mining and Development Company Limited in 1916. A 7.6 m deep shaft was sunk on the Valley Vein in the early 1920's, and a second shaft to the north was sunk to a depth of 10 m. The property was assigned to Kingfisher Gold Mines Limited in 1934, who drilled a number of shallow holes. The property was assigned to Kingfisher Mining & Development Company Limited in 1944. In 1945 they optioned the ground first to Transcan Investors Limited and then Kiwago Gold Mines Limited. Kiwago Gold Mines Limited deepened the 10 m shaft to 82 m. The claim was cancelled in 1961.

Numerous parties staked the ground from 1961 to 1978. Five diamond drill holes totalling 87 m were drilled in 1963 by J.C. Gibson (A.F. 91115). W. Bruce Dunlop staked CB 10061 over the ground in 1978. The claim was transferred to Camflo Mines Limited in 1981. Geophysical, geochemical and geological surveys of the property were carried out in 1981 by Camflo Mines Limited who optioned the property to Angela Development Limited and Arbor Resources Incorporated. Arbor Resources Incorporated conducted a ten hole diamond drill program in 1984 (data not available).

GEOLOGICAL SETTING:

The area is underlain by coarse grained, massive quartz diorite of the Ross River Pluton, and is flanked to the east and southeast by gabbro, Dove Lake Formation sedimentary rocks and Tinney Lake Formation mafic volcanic rocks (Fig. 10-1). The diorite is transected by a 0.3-5 m thick shear zone that is oriented 320-330°/60-75°NE and is traceable for approximately 300 m along strike. Within and near the shear zone, quartz diorite is chloritized and kaolinized and plagioclase crystals are reddened (hematized?). Minor Fe-carbonate and sericite accompany quartz diorite in the shear zone (Stephenson, 1971).

MINERALIZATION:

Approximately 1% disseminated pyrite occurs in discontinuous quartz lenses in quartz diorite to granodiorite within the shear zone. Stephenson (1971) also noted accessory chalcopyrite and trace visible gold. The quartz lenses consist of sugary, smoky to blue-black and white to greyish-white quartz. Discontinuous lenses and stringers of quartz constitute less than 10% of the shear zone. The lenses are up to 40 cm thick and are slightly oblique to the strike of foliation. The shear zone and quartz lenses are exposed in eight contiguous trenches over a distance of approximately 100 m (Fig. 11-1).

GEOCHEMICAL DATA:

Gold analyses for two chip samples and one grab sample are given in Figure 11-1.

CLASSIFICATION:

Vein type deposit. Quartz lenses contain sparse pyrite within a shear zone in quartz diorite.

REFERENCES:

Assessment File 91115
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 52L/14 Au16
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey or Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **12**

NAME: ELDORADO

UTM: 5641310N/331118E (south shaft)

ACCESS: Traverse 4.5 km west along an abandoned powerline from the abandoned Central Manitoba Au minesite (location 1) to the Eldorado south shaft. The north shaft (Fig. 10-1, 12b) can be reached by a bush trail leading northwest from the south shaft (Fig. 10-1, 12a).

AREA: South of Halfway Lake (Fig. 10-1).

AIRPHOTO: A24712-41

EXPLORATION SUMMARY:

The history of exploration and development of location 12 is detailed in Mineral Inventory Card 52L/14 Au5. The area was first recorded as the Eldorado claiqm by W. Walton in 1916. Development work from 1926 to 1943 included numerous pits and trenches and two shafts: 1) the No. 1 shaft, sunk to 159 m with 1336 m of drifts and 92 m of crosscuts (12a, Fig. 10-1); and 2) the No. 2 shaft, 17 m deep (12b, Fig. 10-1). The lease was abandoned by Eldorado Mining and Refining Limited in 1963.

W. Bruce Dunlop staked CB 10061 over the area in 1978. This claim was transferred to Camflo Mines Limited in 1981, who carried out geophysical, geochemical and geological surveys. Camflo Mines Limited optioned the property to Angela Development Limited and Arbor Resources Incorporated. Arbor Resources Incorporated conducted a ten hole diamond drill program in 1984 (data not available).

GEOLOGICAL SETTING:

The area is underlain by gabbro intruded by Ross River Pluton quartz diorite; (Fig. 10-1). A 0.3-1.5 m thick shear zone, oriented 310°/90° and traceable for 0.5 km along strike, transects the quartz diorite. Quartz diorite is weakly foliated and chloritized near the shear zone. Within the shear zone, the host rock is altered to quartz-sericite schist containing rounded relict feldspar crystals. A discontinuous, pinch and swell, lensoidal quartz vein, <0.5 m thick, occurs within the shear zone.

MINERALIZATION:

Trace to minor fine grained pyrite is disseminated and concentrated along fractures in the quartz vein (Stewart, 1985). Stephenson (1971) also noted accessory pyrite, chalcopyrite, and traces of sphalerite and visible gold. The quartz vein consists of glassy, white to greyish-white quartz with accessory albite, Fe-carbonate, chlorite, sericite and tourmaline.

GEOCHEMICAL DATA:

Results of Au analysis for four chip samples are given in Table 12-1.

CLASSIFICATION:

Vein type deposit. An auriferous quartz vein with minor pyrite occurs in a shear zone within quartz diorite.

Table 12-1: Au contents in samples from location 12

Sample No.	Sample Type	Rock Type	Mineral -ization	Au content
66A	0.5 m chip	quartz vein	tr. py	611 ppb
67B	2 m chip	quartz vein	1% py	12 ppb
69A	2 m chip	quartz vein, sheared, quartz diorite	minor py	1.2 g/t
70A	2 m chip	quartz vein, sheared,quartz diorite	tr. py	1.2 g/t

REFERENCES:

Mineral Inventory Card 52L/14 Au5
Manitoba Energy and Mines, Minerals Division.

Stephenson, J.F.
1971: Gold deposits of the Rice Lake-Beresford Lake greenstone belt, southeastern Manitoba; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 337-374.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

LOCATION: **13**

NAME: WALTON

UTM: 5641470N/333707E

ACCESS: Traverse 1.7 km west along a powerline from the abandoned Central Manitoba Au minesite (location 1).

AREA: 1.4 km southeast of Halfway Lake (Fig. 10-1).

AIRPHOTO: A24710-40

EXPLORATION SUMMARY:

Stockwell and Lord (1939) report that surface stripping, test pitting and approximately 1000 m of diamond drilling were conducted in 1934 by Walton Gold Limited. A capped shaft, muckpile and collapsed buildings remain at this location.

GEOLOGICAL SETTING:

The area is underlain by gabbro into which a plug of quartz diorite was intruded. These rocks are intruded by gabbro dykes/sills and are flanked to the west by Ross River Pluton quartz diorite, and to the east and south by Dove Lake Formation sedimentary rocks and Tinney Lake Formation mafic volcanic rocks (Fig. 10-1). The mineralization is hosted by a medium grained quartz diorite plug, probably an outlier of the Ross River Pluton. The quartz diorite intrusion is crosscut by a shear zone that strikes 330°. The shear zone, which is exposed for approximately 260 m, bifurcates and anastomoses along strike. Discontinuous blue-grey to black quartz lenses, <30 cm thick, occur within the shear zone.

MINERALIZATION:

The quartz vein contains up to 3% erratically distributed pyrite, minor pyrrhotite and trace chalcopyrite. Trace pyrite is also present in quartz diorite in the vicinity of the quartz veins.

GEOCHEMICAL DATA:

Results of Au analysis for one grab and five chip samples are presented in Figure 13-1.

CLASSIFICATION:

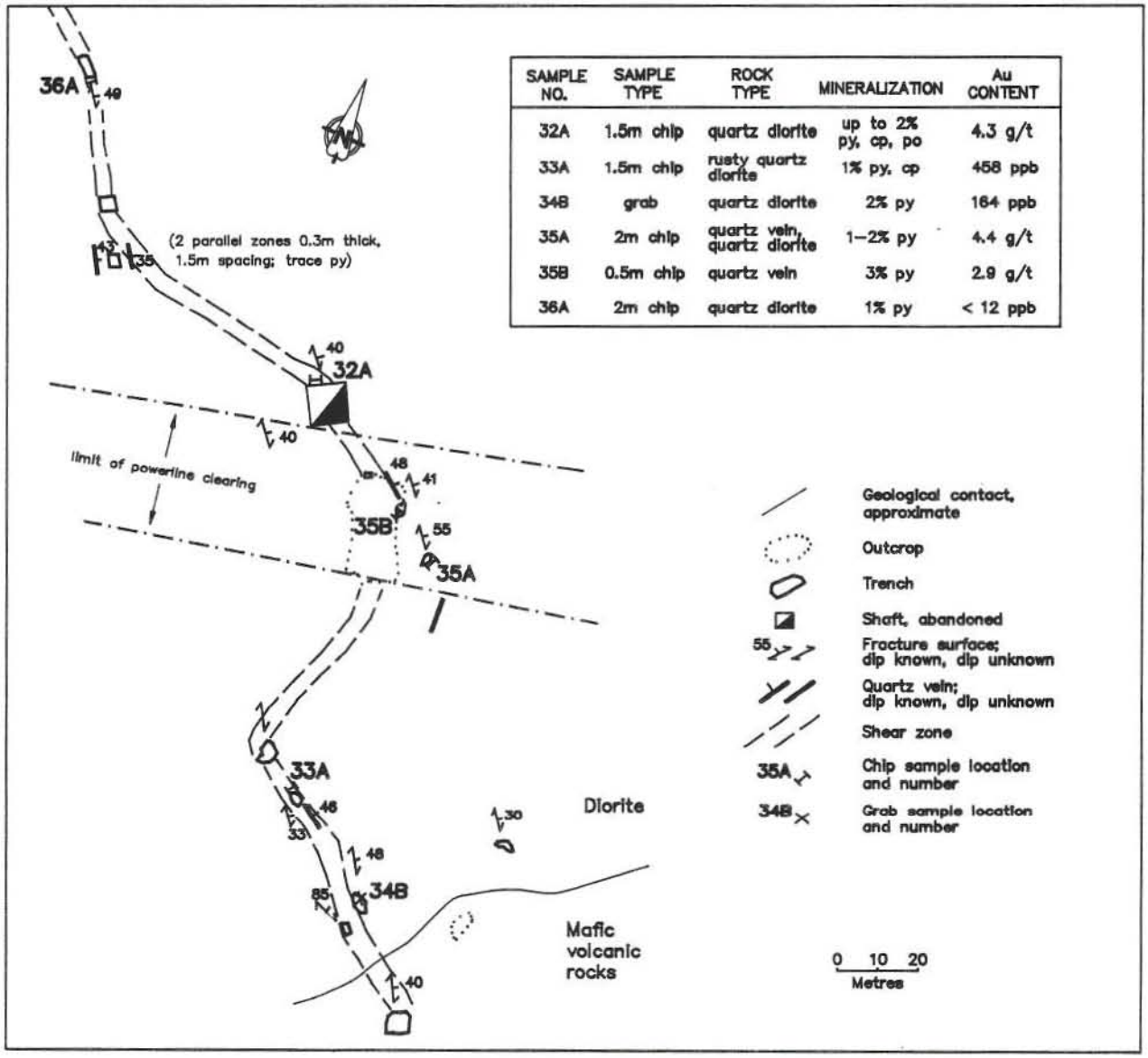
Vein type deposit. Discontinuous auriferous quartz lenses with minor Fe-sulphide minerals and chalcopyrite occur in a shear zone within quartz diorite.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.



SAMPLE NO.	SAMPLE TYPE	ROCK TYPE	MINERALIZATION	Au CONTENT
32A	1.5m chip	quartz diorite	up to 2% py, cp, po	4.3 g/t
33A	1.5m chip	rusty quartz diorite	1% py, cp	458 ppb
34B	grab	quartz diorite	2% py	164 ppb
35A	2m chip	quartz vein, quartz diorite	1–2% py	4.4 g/t
35B	0.5m chip	quartz vein	3% py	2.9 g/t
36A	2m chip	quartz diorite	1% py	< 12 ppb

Figure 13-1: Detailed geology and sample locations at occurrence 13 (Walton).

LOCATION: **14**

NAME: GOLD HILL

UTM: 5640376N/334305E

ACCESS: Traverse 1.7 km southwest from the abandoned Central Manitoba Au minesite (location 1) along a powerline, then 200 m southeast.

AREA: 1.7 km west of Dove Lake (Fig. 10-1).

AIRPHOTO: A24710-39

EXPLORATION SUMMARY:

Trenches have been excavated on this occurrence; details of this work are not available.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks that are flanked to the north by Dove Lake Formation sedimentary rocks and gabbro, and to the south by Ross River Pluton quartz diorite (Fig. 10-1). The occurrence is hosted by fine grained, partly fragmental, mafic to intermediate volcanic rocks (Fig. 14-1). The northern zone of moderate to strong foliation, which trends 300°, is 1-6 m thick and is traceable for 100 m along strike. The southern zone is 2-6 m thick and can be traced over 15 m strike length. Irregular, discontinuous quartz veins, <10 cm to 1.5 m thick, are emplaced in the zones.

MINERALIZATION:

Trace to 1% disseminated pyrite and malachite stains occur in quartz veins and volcanic rocks within the shear zone.

GEOCHEMICAL DATA:

A 3 m chip sample (77A) of foliated mafic host rock with 1% pyrite contained 2.8 g/t Au. A 6 m chip sample (79A) of blue-black vein quartz and foliated host rock with trace pyrite and malachite stains contained 85 ppb Au. Sample locations are shown in Figure 14-1.

CLASSIFICATION:

Vein type deposit. Discontinuous auriferous quartz veins with trace to 1% pyrite occur in zones of moderate to strong foliation in mafic volcanic rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

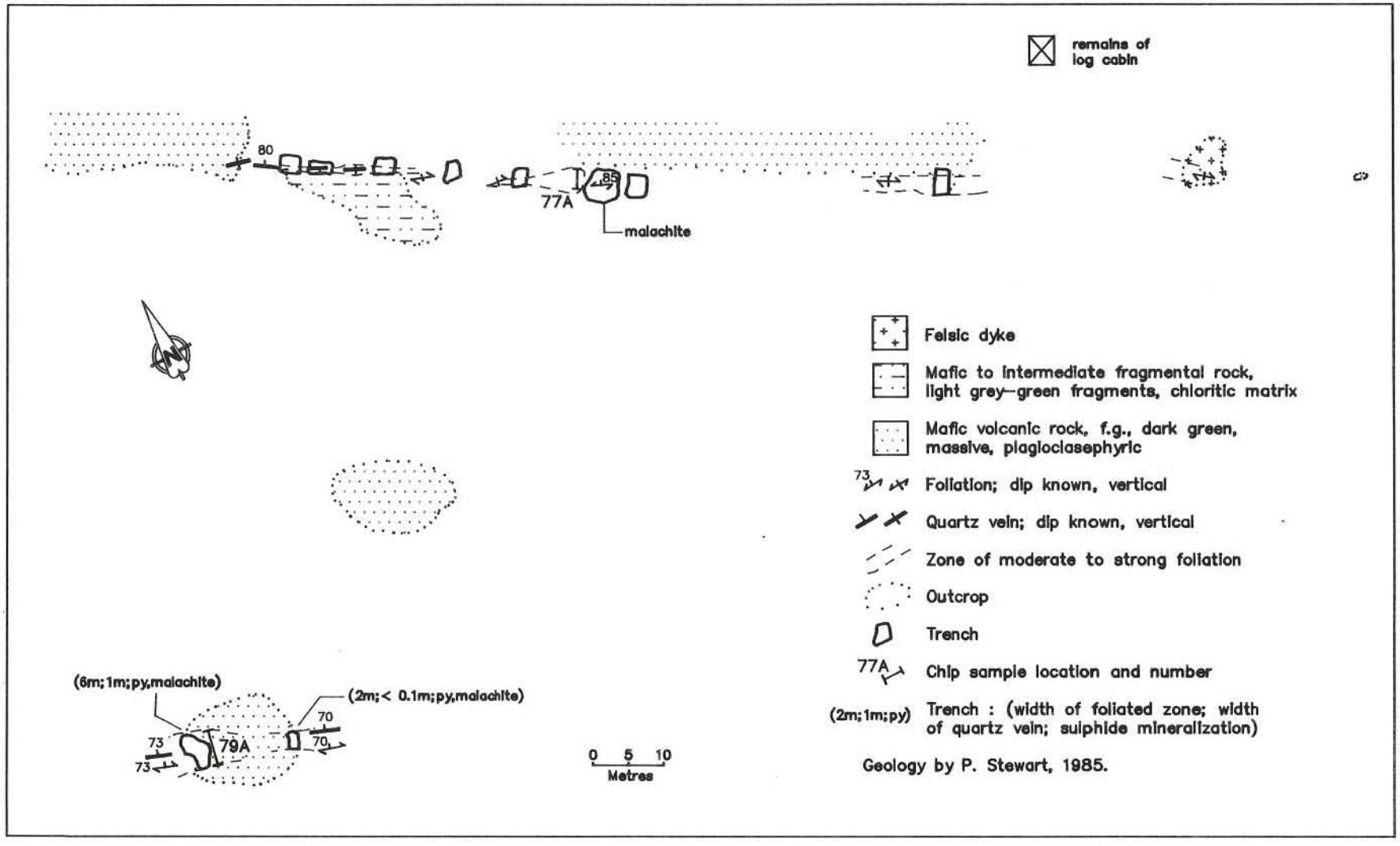


Figure 14-1: Detailed geology and sample locations at occurrence 14 (Gold Hill).

LOCATION: **15**

NAME: QUARTZ LAKE
UTM: 5645770N/336649E
ACCESS: Traverse 0.4 km west of Provincial Road 304.

AREA: 0.2 km northwest of Quartz Lake.
AIRPHOTO: A24670-97

EXPLORATION SUMMARY:

Four trenches have been excavated at location 15 (details unknown). Geological mapping, a magnetometer survey and a three hole diamond drill program totalling 96 m were carried out on behalf of Grosse Pointe Mines Limited in 1949 (A.F. 91114).

GEOLOGICAL SETTING:

The area is underlain by gabbro that is flanked to the northeast and southwest by mafic volcanic rocks of the Tinney Lake and Gunnar formations (Fig. 15-1). The occurrence is hosted by fine- to medium-grained, massive to foliated, amphibole-rich mafic volcanic(?) rocks (Fig. 152). These mafic rocks are transected by a shear zone oriented at 130°/70-85°SW that is up to 3 m thick and traceable for 120 m along strike. Numerous quartz veins and white carbonate veinlets occur along the shear zone parallel to foliation. Sections of massive rock along strike between the trenches may indicate that the shear consists of several small disjointed shear zones.

MINERALIZATION:

Quartz veins contain 0.5-1% pyrite as fine grained disseminations and euhedral coarse grained clusters, and trace chalcopyrite. The quartz veins have an average thickness of <20 cm, but can be up to 2 m thick. The veins are white, locally rusty weathering and contain inclusions and stringers of buff carbonate and chlorite. In the vicinity of the quartz veins mafic volcanic rocks are carbonatized and sericitized. Rare pyrite and chalcopyrite hosted by chloritized mafic rocks were intersected in three drill holes (A.F. 91114).

GEOCHEMICAL DATA:

Sample locations and results of Au analysis from four chip samples of quartz veins and mafic host rocks are presented in Figure 15-2.

CLASSIFICATION:

Vein type deposit. Discontinuous quartz veins with minor pyrite occur in a shear zone in mafic volcanic rocks.

REFERENCES:

Assessment File 91114
Manitoba Energy and Mines, Minerals Division.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

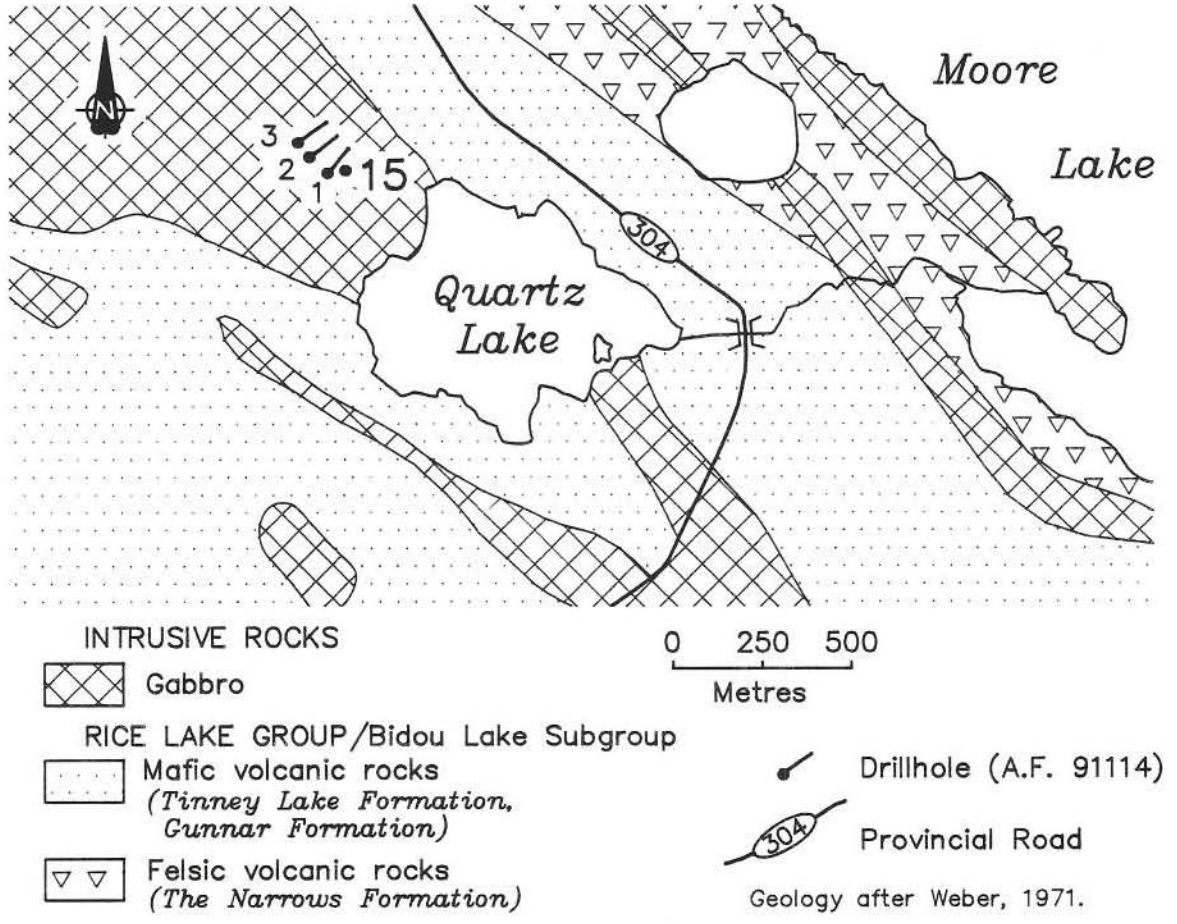
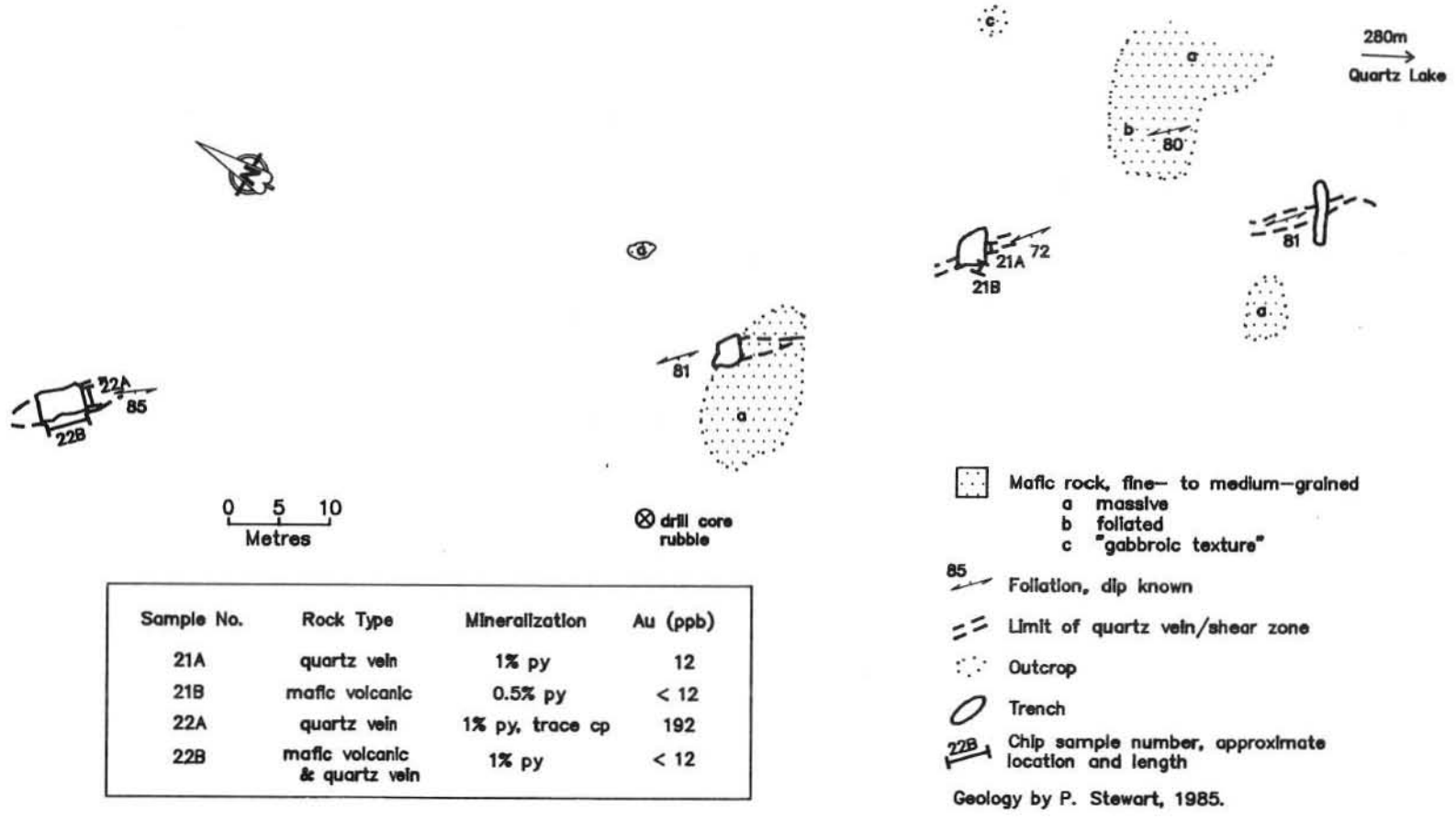


Figure 15-1: Geological setting of occurrence 15.



Sample No.	Rock Type	Mineralization	Au (ppb)
21A	quartz vein	1% py	12
21B	mafic volcanic	0.5% py	< 12
22A	quartz vein	1% py, trace cp	192
22B	mafic volcanic & quartz vein	1% py	< 12

Figure 15-2: Detailed geology and sample locations at occurrence 15.

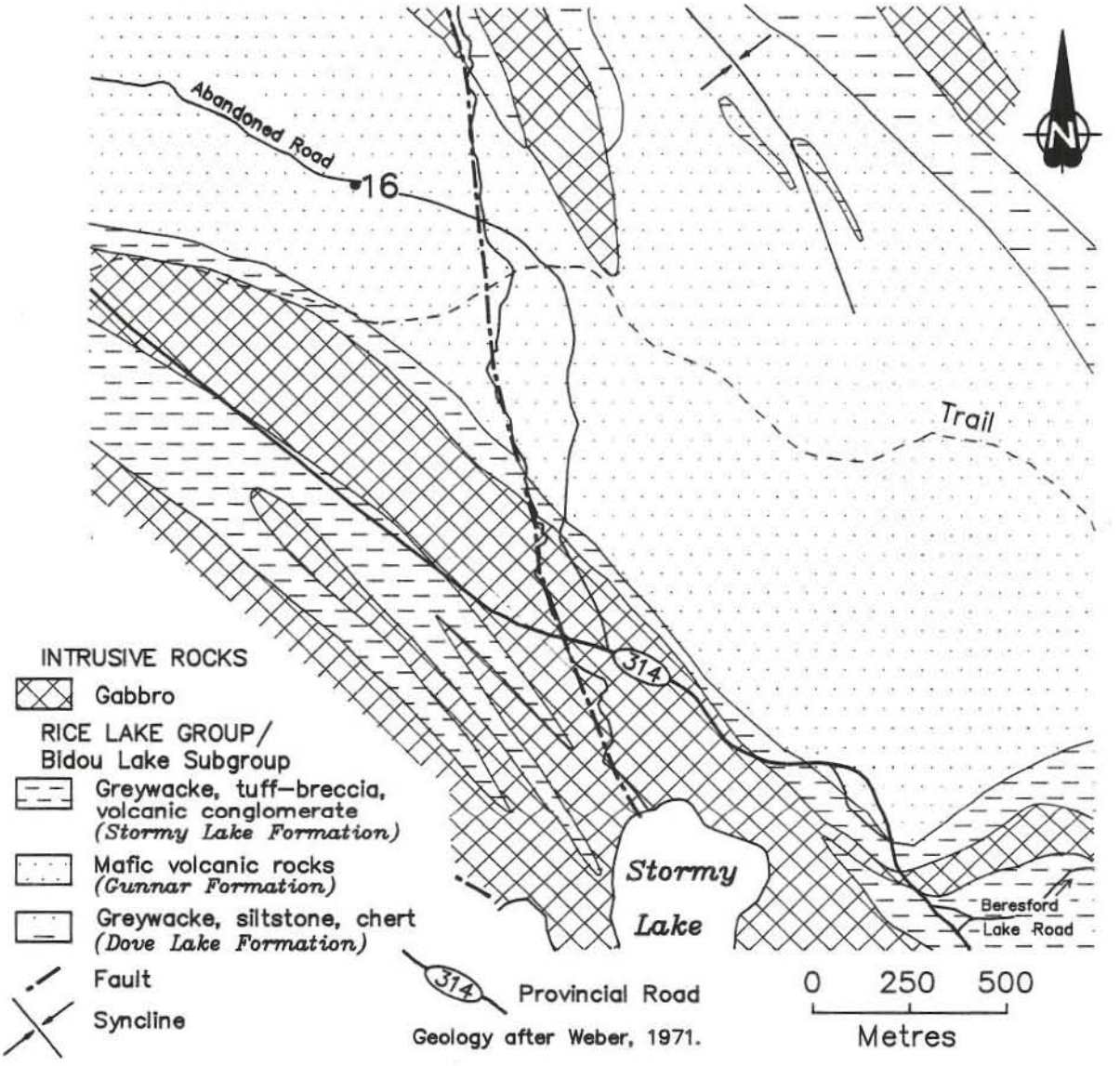


Figure 16-1: Geological setting of occurrence 16 (Midway).

LOCATION: **16**

NAME: MIDWAY

UTM: 5638400N/338081E

ACCESS: Via all-terrain vehicle or traverse along an abandoned road leading from Provincial Road 314.

AREA: 1.8 km northwest of Stormy Lake.

AIRPHOTO: A24709-233

EXPLORATION SUMMARY:

The occurrence has been described by Wright (1932) and Stockwell and Lord (1939). A series of pits and trenches are present at location 16; details regarding this work are not available.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation mafic volcanic rocks. These rocks are flanked to the northeast and southwest by sedimentary and volcanic fragmental rocks of the Stormy Lake Formation and the Dove Lake Formation that are intruded by numerous gabbro sills (Fig. 16-1). The occurrence is underlain by mafic pillowed flows, lesser fragmental rocks and a quartz-feldspar porphyry dyke. The dyke trends 300-335°, dips steeply to the north, is up to 10 m thick and is exposed for 0.6 km along strike. A nonpervasive shear zone comprising several smaller, parallel shear zones that are up to 20 cm thick occurs within and adjacent to the quartz-feldspar porphyry dyke. Within the shear zone, the host rock is altered to quartz-sericite schist. Numerous discontinuous black and white quartz lenses and stringers are present in the shear zone.

MINERALIZATION:

Pyrite, 1-5%, occurs in the quartz-feldspar porphyry dyke. Quartz veins are either barren of sulphide minerals or contain only traces of mineralization (Stewart, 1985).

GEOCHEMICAL DATA:

Results of Au analysis for six chip and two grab samples of quartz veins and the quartz-feldspar porphyry dyke are listed in Table 16-1.

CLASSIFICATION:

Vein type deposit. A shear zone in a quartz-feldspar porphyry dyke contains discontinuous auriferous quartz veins with minor pyrite.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

Table 16-1: Au contents in samples from location 16

Sample No.	Sample type	Rock type	Mineralization	Au content
37A	5 m chip	quartz-feldspar porphyry	5% py	1.2 g/t 215 ppb (reassay)
39A	2 m chip	quartz-feldspar porphyry	1% py	419 ppb
39B	grab	quartz vein	'minor' py	1.1 g/t
40A	5 m chip	quartz-feldspar porphyry	1-5% py	577 ppb
40B	5 m chip	quartz vein	1% py	1.4 g/t
40C	grab	quartz-feldspar porphyry	'minor' py	79 ppb
63A	7 m chip	quartz-feldspar porphyry	1-2% py	62 ppb
64A	1 m chip	quartz-feldspar porphyry, quartz vein	1-3% py	164 ppb

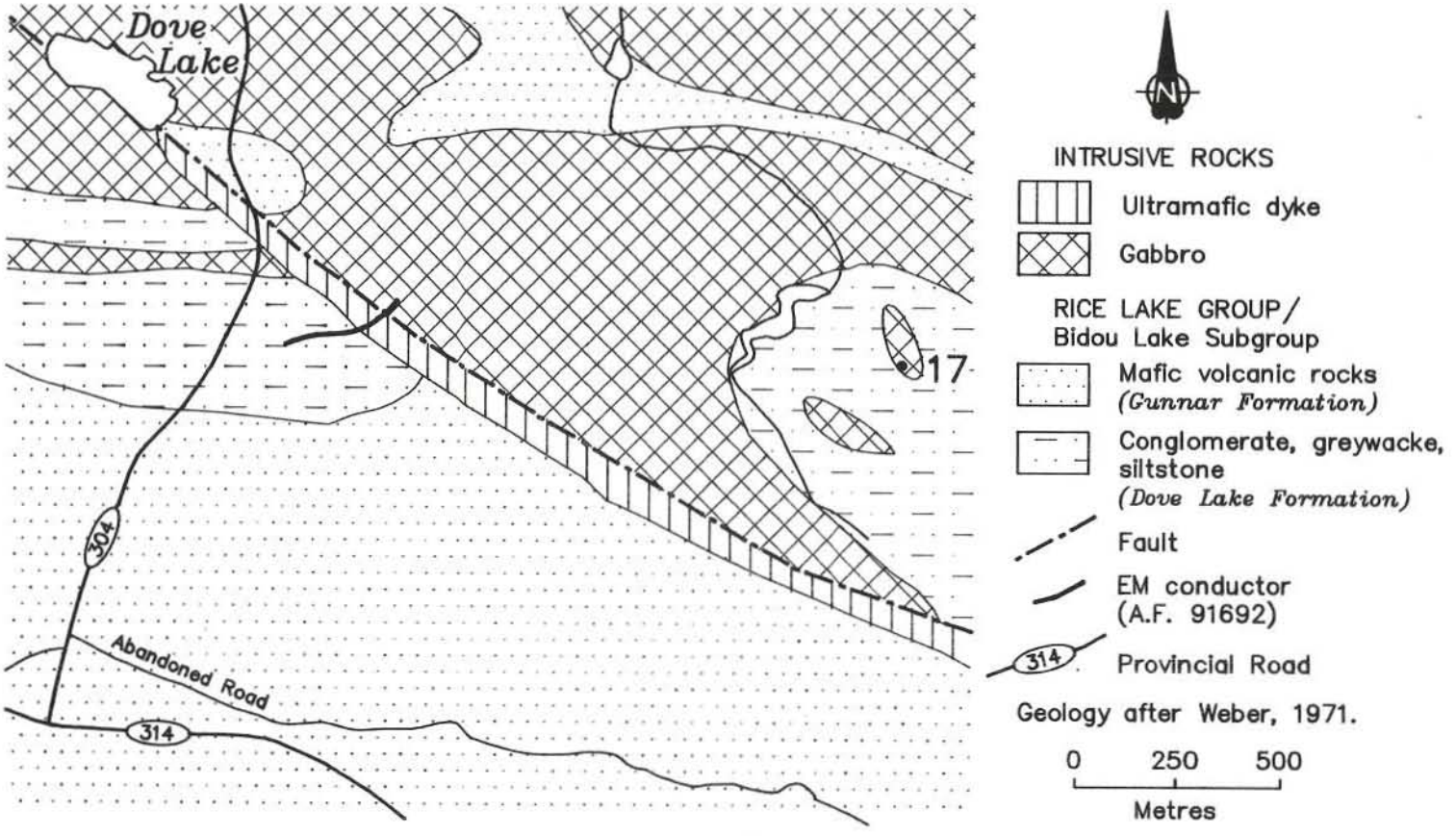


Figure 17-1: Geological setting of occurrence 17 (Ace).

LOCATION: 17

NAME: ACE

UTM: 5639669N/337928E

ACCESS: Traverse approximately 1.7 km east from Provincial Road 304.

AREA: 1.9 km east-southeast of Dove Lake.

AIRPHOTO: A24670-100

EXPLORATION SUMMARY:

Scotia Gold Mines Limited excavated trenches and drilled six diamond drill holes (details unknown) from 1933 to 1937 (Stockwell and Lord, 1939). An airborne EM survey was conducted over the area by Manitoba Mineral Resources Limited in 1972 (A.F. 91692).

GEOLOGICAL SETTING:

The area is underlain by a small gabbro plug that intruded Dove Lake Formation sedimentary rocks (Fig. 17-1). A larger gabbroic intrusion occurs to the north and west. The occurrence is underlain by a light green-grey to dark green, fine- to coarse-grained, massive to foliated, ophitic mafic rock (Fig. 17-2). Shear zones up to 1.5 m thick and 30 m long host a series of white to grey, discontinuous quartz veins that are up to 20 cm thick.

MINERALIZATION:

Up to 1% pyrite veinlets and trace disseminated chalcopyrite occur locally within the quartz veins. White and pink carbonate is disseminated in the veins and also occurs as discrete veinlets in the shear zones. Quartz-carbonate veins infill extensional cross fractures. The mafic host rock contains trace disseminated pyrite, particularly near the quartz veins.

GEOCHEMICAL DATA:

A chip sample (41A) of an approximately 0.5 m thick rust-stained zone containing a 10 cm thick quartz vein with minor pyrite contained 1.0 g/t Au. A 2 m chip sample (41B) of foliated mafic host rock with minor euhedral pyrite contained 62 ppb Au. Sample locations are shown in Figure 17-2.

CLASSIFICATION:

Vein type deposit. Discontinuous auriferous quartz veins with trace pyrite occur in shear zones within mafic intrusive rocks.

REFERENCES:

Assessment File 91692
Manitoba Energy and Mines, Minerals Division.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

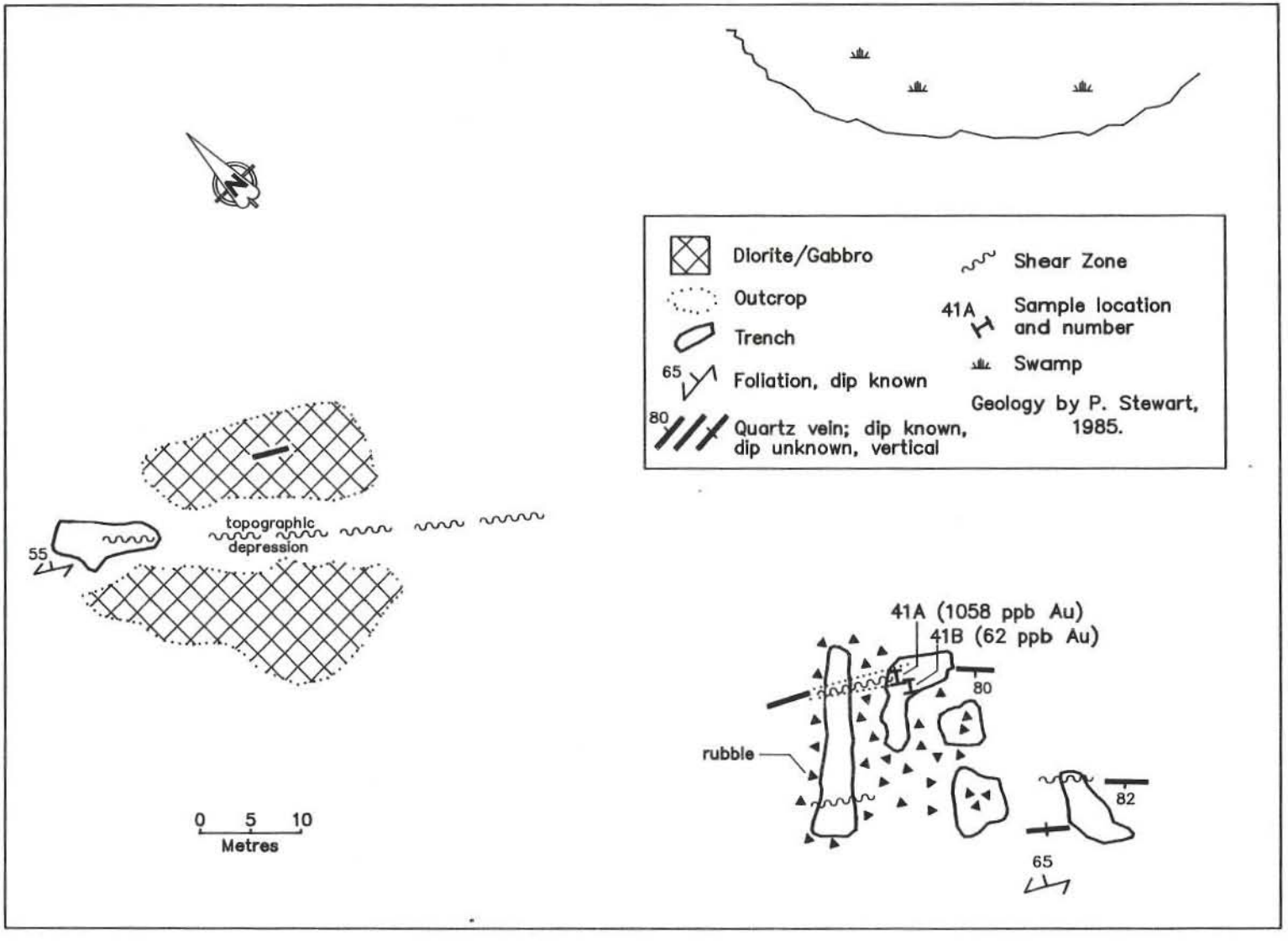


Figure 17-2: Detailed geology and sample locations at occurrence 17.

LOCATION: **18**

NAME: SL
UTM: 5646876N/336761E
ACCESS: Traverse 300 m east from Provincial Road 304.

AREA: West of Moore and Partridge lakes.
AIRPHOTO: A24670-96

EXPLORATION SUMMARY:

Exploration of this property, staked in 1979, consisted of excavating several pits and trenches exposing several quartz veins. In 1988-89 Crack Resources Limited, in joint venture with Almaden Resources Corporation, extended a trench exposing a semi-continuous quartz vein to approximately 180 m length and drilled 15 diamond drill holes totalling 1003 m (data not available).

GEOLOGICAL SETTING:

The area is at the contact between fine- to coarse-grained, dark green, massive to strongly foliated, locally gabbroic-textured mafic rocks, and fragmental felsic volcanic rocks of The Narrows Formation (Fig. 18-1). The occurrence is a semi-continuous quartz vein hosted by a northwest-striking shear zone traceable over a distance of approximately 250 m (Zone 1) (Fig. 18-2). This vein is accompanied by several, ancillary, subparallel quartz veins (1-5 m length). The shear zone is hosted by fragmental felsic volcanic rocks containing angular to subrounded fragments that range from ash-size to blocks exceeding 15 cm in length embedded in a grey to buff, locally feldspar-phyric matrix. Alteration adjacent to the quartz vein consists of an intensely sheared zone approximately 1-3 m wide characterized by bleaching and chloritization.

A second shear zone (Zone 2) occurs subparallel to and approximately 50 m west of Zone 1 in a fine- to coarse-grained mafic rock with a partly gabbroic appearance. Zone 2 is less than 1.5 m thick and traceable over 100 m strike length. Within the shear zone, mafic rocks have been altered to chlorite-carbonate schist and contain numerous quartz veins, <60 cm thick, that are parallel to foliation.

MINERALIZATION:

The quartz veins and adjacent host rock comprising Zone 1 are mineralized with pyrite, 1-3%, and subordinate chalcopyrite. Up to 50% coarse crystalline pyrite was observed in dark green chloritized fragments in the northwestern part of the quartz vein.

Quartz veins and adjacent sheared mafic wall rocks of Zone 2 contain trace disseminated pyrite and rare chalcopyrite (Stewart, 1985).

GEOCHEMICAL DATA:

A news release by Crack Resources Limited (February, 1989) gave results of surface and drill core samples from Zone 1:

Surface samples (quartz vein and host rocks)

Chip sample, 2.7 m long - 9.5 g/t Au, 3.5 g/t Ag
Chip sample, 1.9 m long - 9.5 g/t Au, 0.8 g/t Ag
Chip sample, 2.2 m long - 14.0 g/t Au, 1.98 g/t Ag
Chip sample, 1.84 m long - 3.73 g/t Au, 3.03 g/t Ag

Drill core samples

DDH 4 - 49.03 g/t Au over 0.3 m
DDH 5 - 62.74 g/t Au over 0.15 m
DDH 8 - 365.82 g/t Au over 0.15 m
DDH 13 - 46.97 g/t Au over 0.15 m

A 1.2 m long chip sample (44A) of a quartz vein and sheared mafic rock with up to 0.5% pyrite in Zone 2 contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. Multiple auriferous quartz veins with trace pyrite occur in sheared mafic intrusive rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

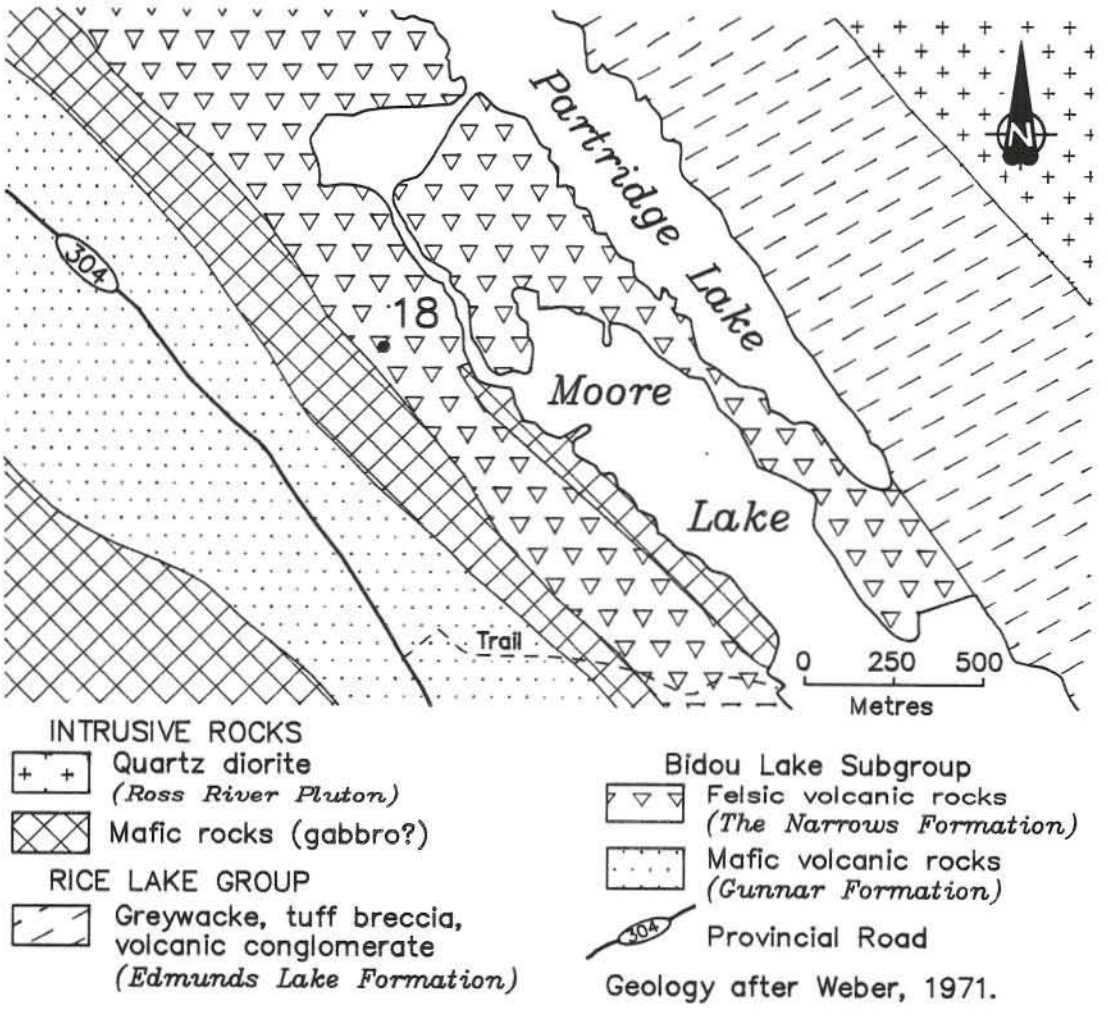


Figure 18-1: Geological setting of occurrence 18.

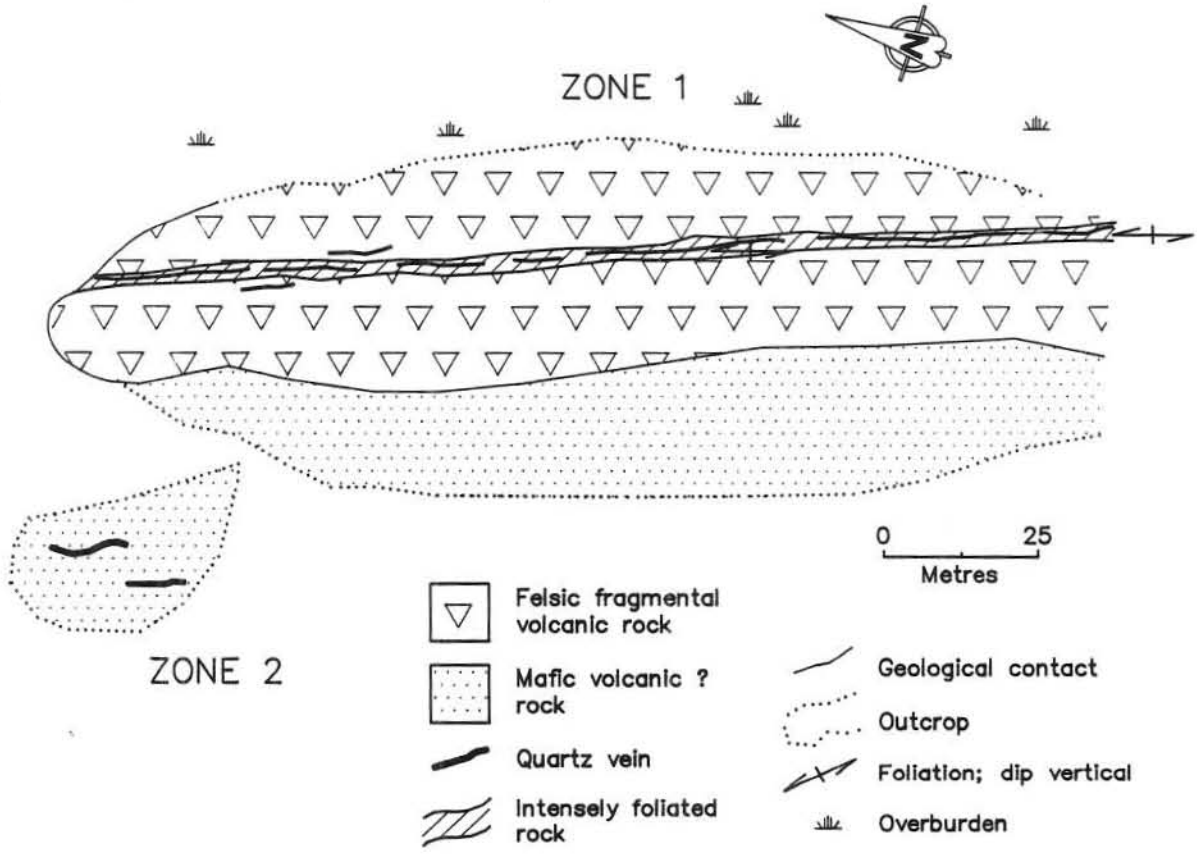


Figure 18-2: Detailed geology at occurrence 18.

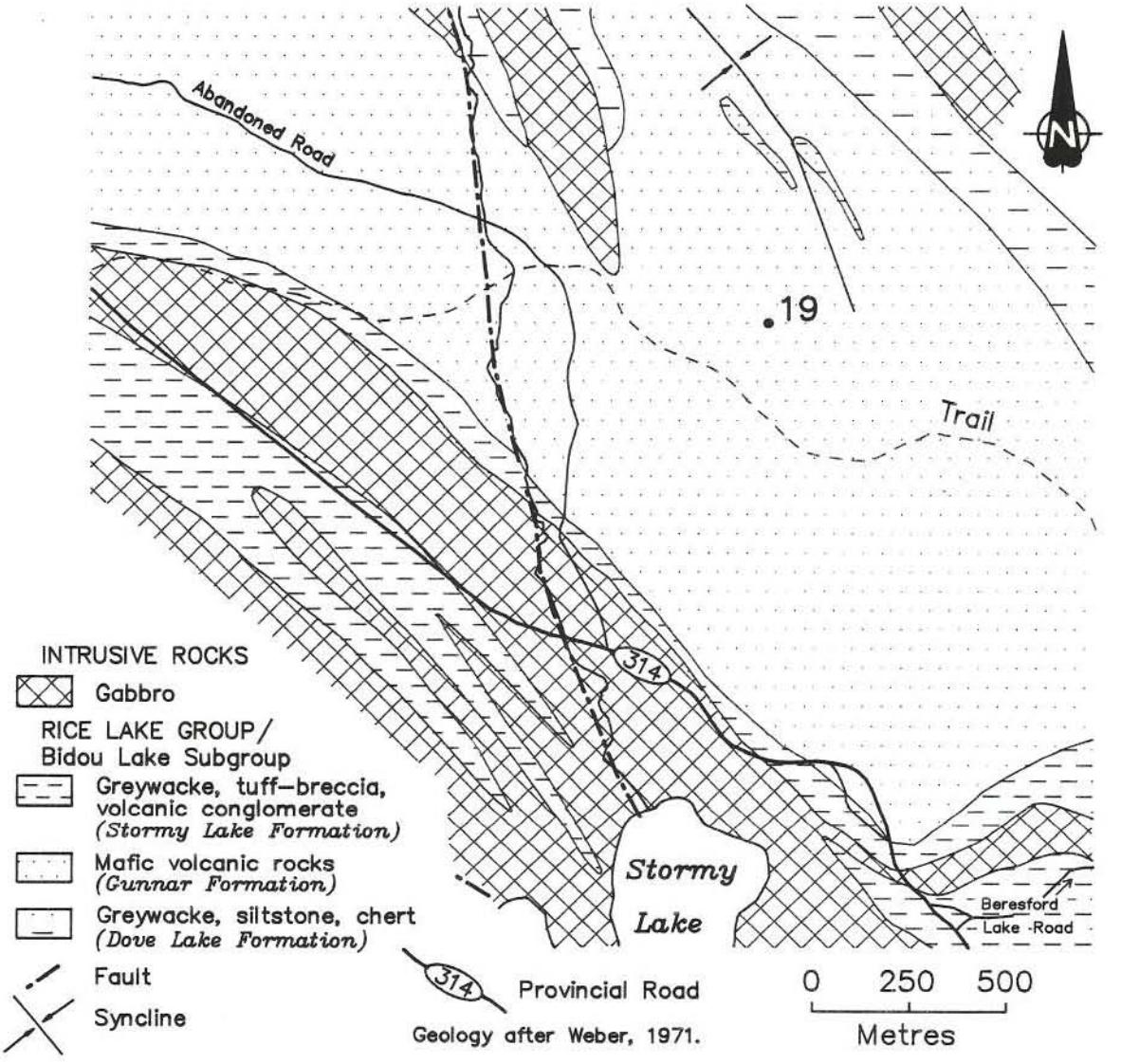


Figure 19-1: Geological setting of occurrence 19 (Bermuda).

LOCATION: **19**

NAME: BERMUDA
UTM: 5638104N/339166E
ACCESS: Traverse 200 m north of a trail leading from abandoned Provincial Road 304.

AREA: 1.4 km north of Stormy Lake.
AIRPHOTO: A24709-233

EXPLORATION SUMMARY:

Stockwell and Lord (1939) report the existence of a series of prospect pits at this location. Further details are not known.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation mafic volcanic rocks, flanked to the northeast and southwest by Stormy Lake and Dove Lake formations sedimentary and volcanic fragmental rocks intruded by numerous gabbro sills (Fig. 19-1). Dark green to light grey-green, dominantly fragmental and lesser pillowed, mafic to intermediate volcanic rocks are crosscut by a very fine grained plagioclase-phyric felsic dyke and narrow very fine grained aplitic dykes. A 325°-trending shear zone, up to 3 m wide and traceable for over 300 m strike length, is restricted to the feldspar porphyry dyke. Discontinuous milky white quartz veins generally <20 cm thick accompany the shear zone.

MINERALIZATION:

Up to 5% disseminated pyrite and trace pyrrhotite occur within the feldspar porphyry dyke, and to a lesser extent, in sheared mafic fragmental rocks and quartz veins. Quartz veins are rust stained in places and contain minor Fe-carbonate.

GEOCHEMICAL DATA:

Results of Au analysis from one grab and two chip samples are presented in Figure 19-2.

CLASSIFICATION:

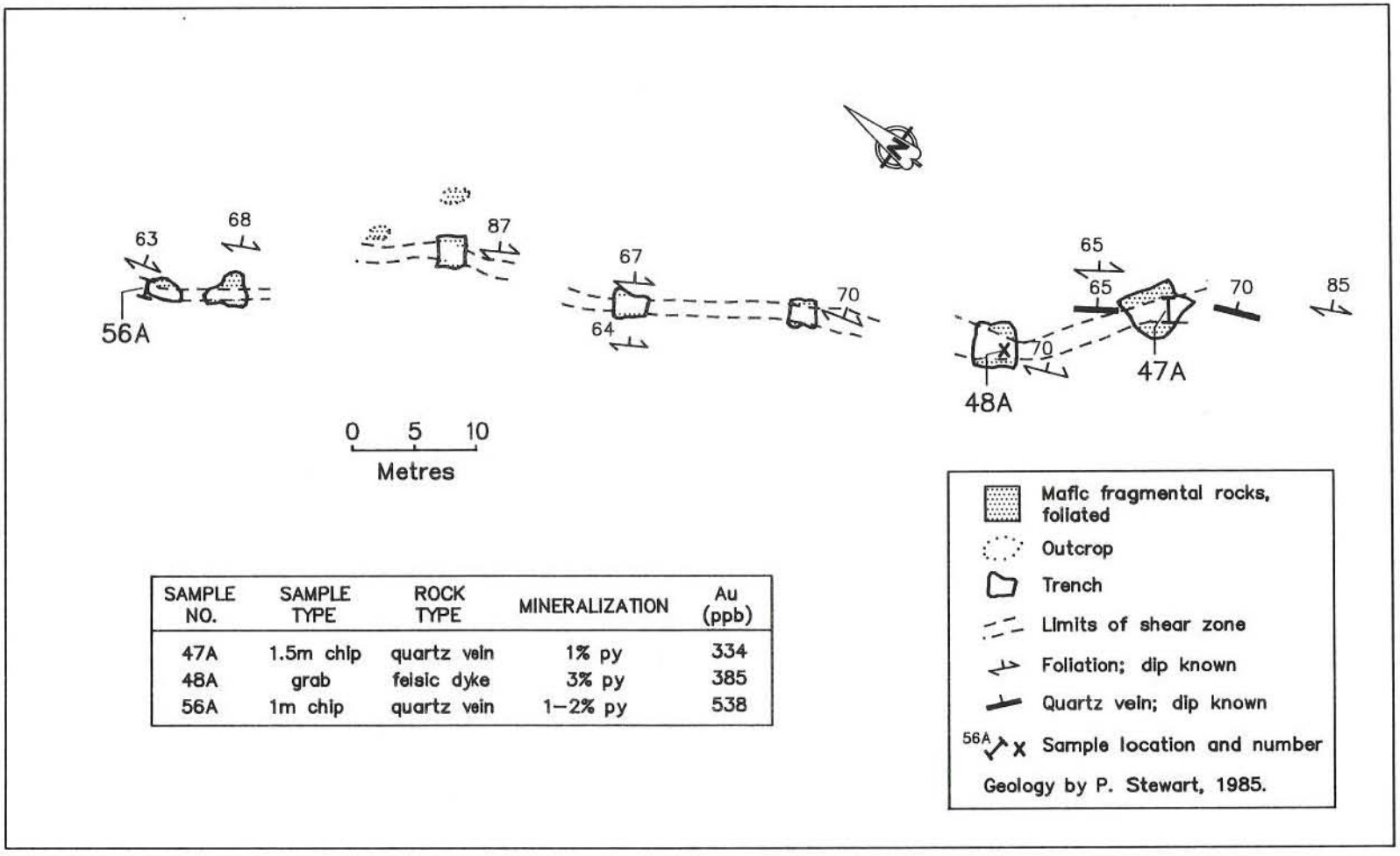
Vein type deposit. An auriferous sheared feldspar porphyry dyke contains discontinuous quartz veins and minor pyrite.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.



SAMPLE NO.	SAMPLE TYPE	ROCK TYPE	MINERALIZATION	Au (ppb)
47A	1.5m chip	quartz vein	1% py	334
48A	grab	felsic dyke	3% py	385
56A	1m chip	quartz vein	1–2% py	538

Figure 19-2: Detailed geology and sample locations at occurrence 19.

LOCATION: **20**

NAME: LUCKY

UTM: 5640075N/336333E

ACCESS: Via Provincial Road 304.

AREA: Along Provincial Road 304 south of the abandoned Central Manitoba Au minesite (location 1).

AIRPHOTO: A24670-100

EXPLORATION SUMMARY:

Two trenches were excavated at location 20; exploration details are not known. Manitoba Mineral Resources Limited conducted an airborne EM survey over the area in 1972 (A.F. 91692).

GEOLOGICAL SETTING:

The area is underlain by Dove Lake Formation sedimentary rocks, Gunnar Formation mafic volcanic rocks, ultramafic rocks and gabbro (Fig. 20-1). Fine grained, amphibole-rich, massive to well foliated mafic rock hosts a quartz-filled shear zone (Fig. 20-2). The shear zone is <3 m thick and is traceable for approximately 80 m along strike.

MINERALIZATION:

A 0.2-0.4 m thick, white to grey, rusty weathered quartz vein contains up to 5% fine- and coarse-grained, euhedral, disseminated pyrite and lesser chalcopyrite. Calcite is a minor constituent, but more commonly forms veinlets adjacent to the quartz vein. The mafic host rock contains minor fine grained disseminated pyrite with coarser grained euhedral pyrite adjacent to the quartz vein.

GEOCHEMICAL DATA:

A 7 m chip sample (53A) containing up to 5% pyrite taken along the strike of the quartz vein analyzed 45 g/t Au.

CLASSIFICATION:

Vein type deposit. An auriferous quartz vein with minor pyrite occurs in a shear zone within mafic volcanic or intrusive rocks.

REFERENCES:

Assessment File 91692
Manitoba Energy and Mines, Minerals Division.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

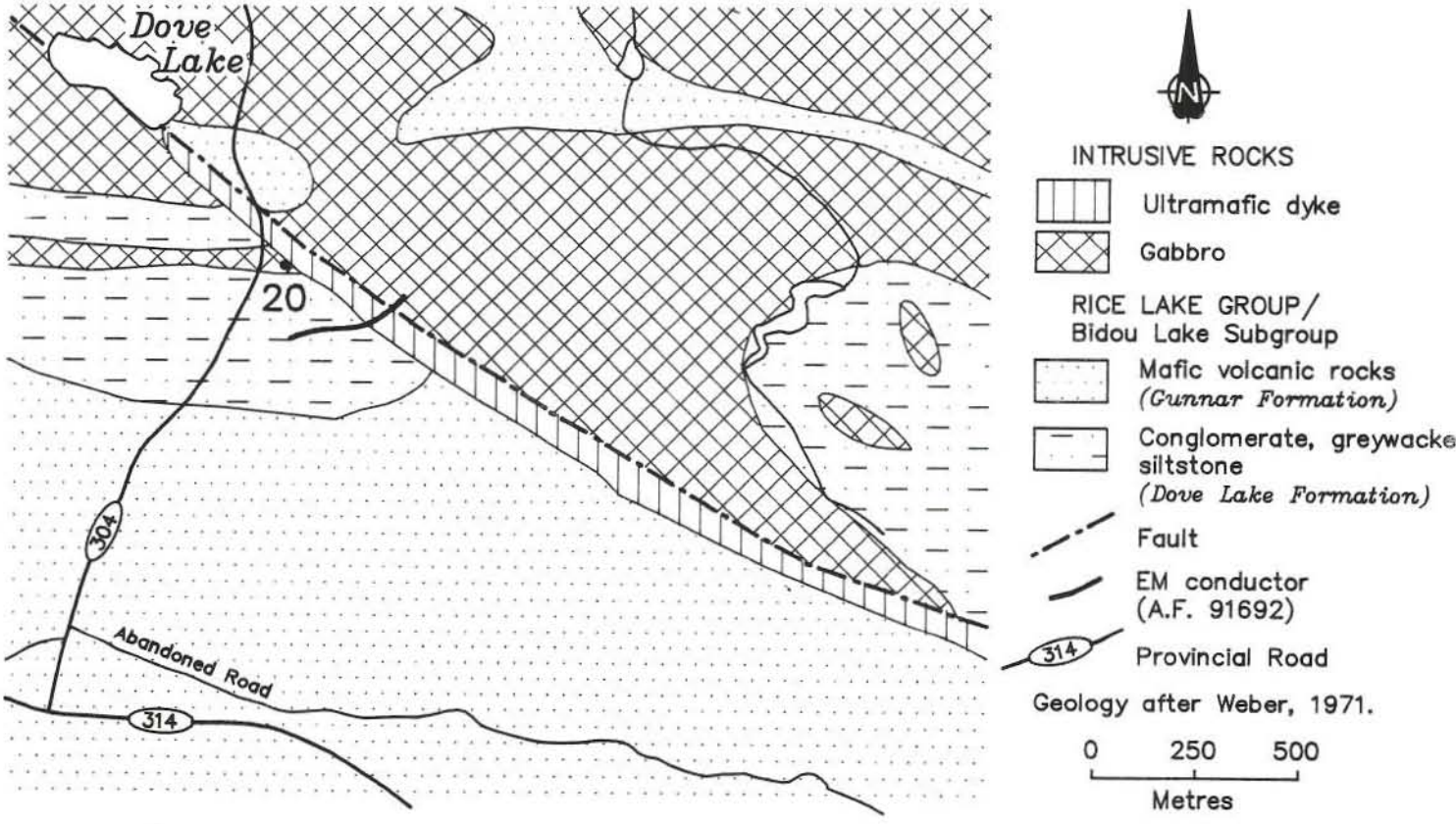


Figure 20-1: Geological setting of occurrence 20.

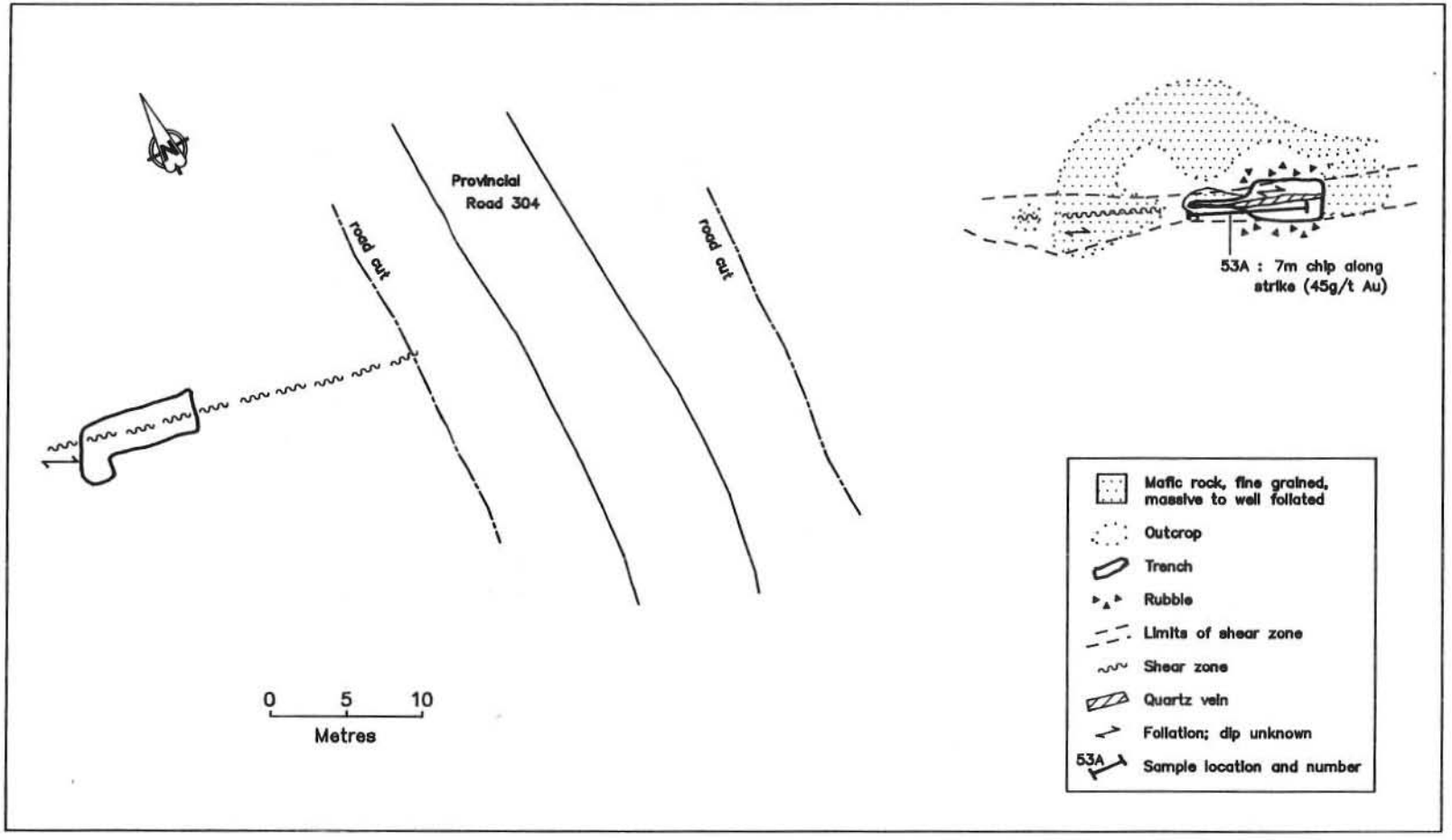


Figure 20-2: Detailed geology and sample location at occurrence 20.

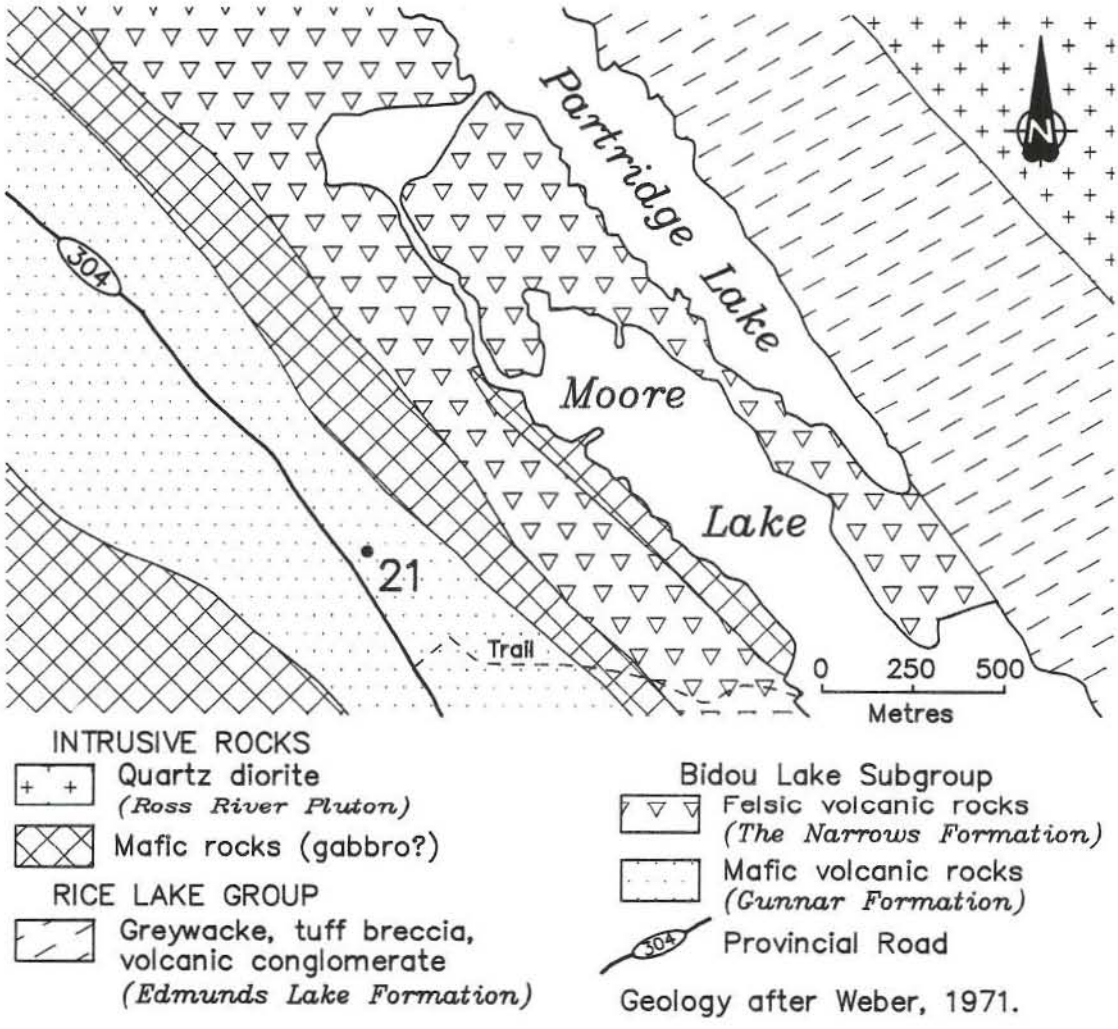


Figure 21-1: Geological setting of occurrence 21.

LOCATION: **21**

NAME: PATY 2
UTM: 5646525N/336585E
ACCESS: Via Provincial Road 304.

AREA: 0.9 km west of Moore Lake.
AIRPHOTO: A24670-96

EXPLORATION SUMMARY:

A pit (5 x 1.65 x 1.8 m) has been excavated, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation mafic volcanic rocks flanked to the west and northeast by gabbro, and to the east by The Narrows Formation fragmental felsic volcanic rocks (Fig. 21-1). Dark- to medium-grey, fine grained, well foliated chloritized and sericitized mafic volcanic rocks host a series of 5-15 cm thick quartz veins within a strongly foliated zone. The veins are white to grey, discontinuous (<10 m long), and are oriented 324°/60°NEsee previous comments, parallel to foliation.

MINERALIZATION:

Very fine grained pyrite, 1%, is disseminated in foliated mafic host rocks. The quartz veins contain trace pyrite and are rusty weathered in places (Stewart, 1985).

GEOCHEMICAL DATA:

A 1.5 m chip sample (54A) from quartz lenses and chloritic mafic host rock containing trace pyrite contained 2.4 g/t Au.

CLASSIFICATION:

Vein type deposit. An auriferous shear zone in mafic volcanic rocks contains quartz lenses and trace to minor pyrite.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

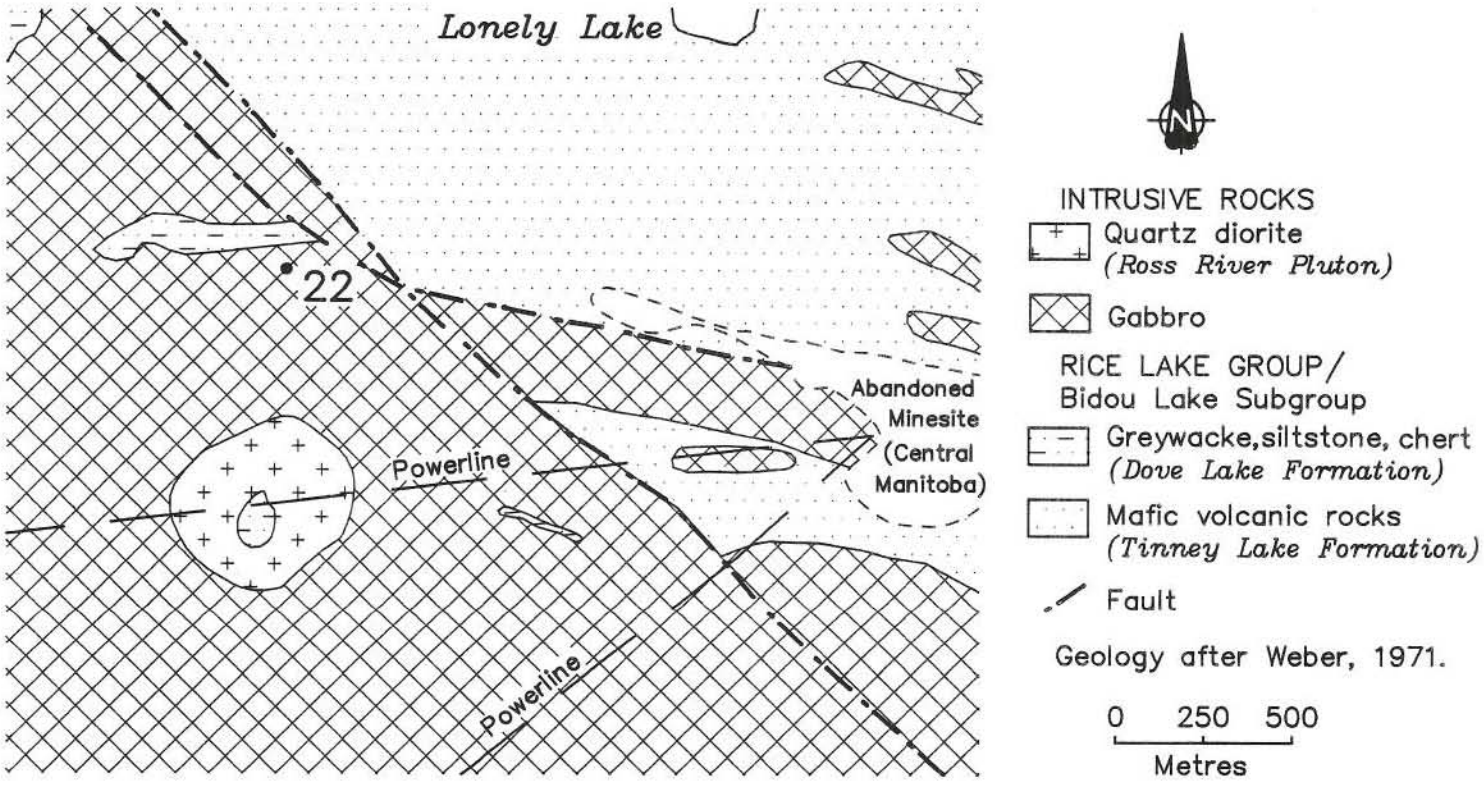


Figure 22-1: Geological setting of occurrence 22 (Gold Bird).

LOCATION: **22**

NAME: GOLD BIRD

UTM: 5642060N/333844E

ACCESS: Traverse approximately 1.9 km north-northwest from the abandoned Central Manitoba Au minesite (location 1).

AREA: 1.9 km west of Central Manitoba minesite (location 1).

AIRPHOTO: A24710-40

EXPLORATION SUMMARY:

Stockwell and Lord (1939) describe location 22 as the Gold Bird claim. Several trenches are present at the occurrence, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by gabbro that is in fault contact with Tinney Lake Formation mafic volcanic rocks (Fig. 22-1). Dark green, fine- to medium-grained, massive gabbroic(?) rocks are transected by a 060°-trending quartz-filled shear zone up to 1 m wide and traceable for approximately 100 m along strike (Fig. 22-2). A late plagioclase-porphyritic felsic dyke crosscuts the shear zone.

MINERALIZATION:

1-2% fine grained disseminated pyrite and rare malachite stains occur in the quartz vein. Locally, trace pyrite is disseminated in the gabbroic host rocks. The quartz vein is white and black and commonly contains chloritic inclusions of host rock that are up to 1 m long and their long axis are parallel to the direction of foliation and the vein. Mafic host rocks are strongly foliated and chloritized within 30 cm of the quartz vein.

GEOCHEMICAL DATA:

A 40 cm chip sample (62A) across the quartz vein with 1-2% pyrite contained 23 ppb Au.

CLASSIFICATION:

Vein type deposit. Minor pyrite accompanies a quartz vein in a shear zone in mafic intrusive or volcanic rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

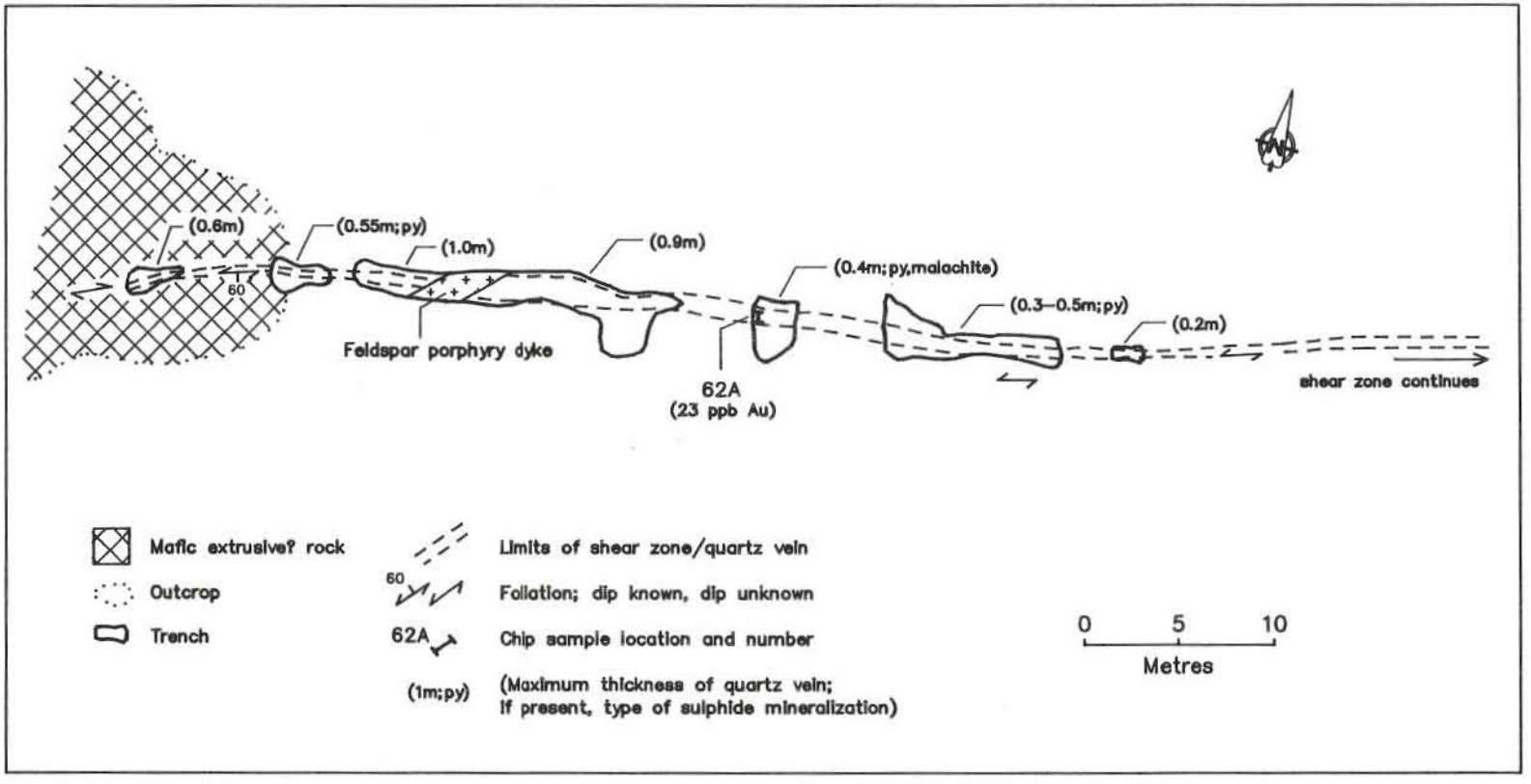


Figure 22-2: Detailed geology and sample location at occurrence 22.

LOCATION: **23**

NAME: MARIE

UTM: 5640433N/338974E

ACCESS: Traverse from the Hope shaft at location 1 (Central Manitoba Au Mine).

AREA: 100 m southeast of Stovel Lake.

AIRPHOTO: A24709-231

EXPLORATION SUMMARY:

Location 23 consists of two sets of trenches and pits: Marie 1 and, less than 100 m to the east, Marie 2. Stockwell and Lord (1939) report that trenching and rock sampling were undertaken by Stovel Lake Gold Syndicate in 1936.

GEOLOGICAL SETTING:

The area is underlain by a gabbro sill that is flanked to the east by Stovel Lake Formation sedimentary rocks, and to the west by Tinney Lake Formation mafic volcanic rocks (Fig. 23-1). At location 23, very fine- to fine-grained, black to light grey, chloritized, laminated mafic volcaniclastic rocks and siltstone contain quartz veins. The mafic host rock contains white carbonate veinlets that parallel foliation. At Marie 1, a massive black and white quartz vein contains buff carbonate and Fe-oxide stains associated with chloritic inclusions. The vein trends approximately 300°, is up to 1.2 m wide and is exposed for 70 m along strike. Discontinuous, white to grey quartz lenses occur at Marie 2.

MINERALIZATION:

The quartz vein at Marie 1 contains trace Fe-sulphide mineralization; at Marie 2, the quartz lenses do not contain sulphide mineralization. The mafic host rock contains <1% pyrite (Stewart, 1985).

GEOCHEMICAL DATA:

Stockwell and Lord (1939) reported assays of 5.1-29.0 g/t Au by Stovel Lake Gold Syndicate from locations 23 and 24; sampling details were not given.

CLASSIFICATION:

Vein type deposit. Quartz veins in mafic volcanic rocks and siltstone contain only trace sulphide mineralization.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

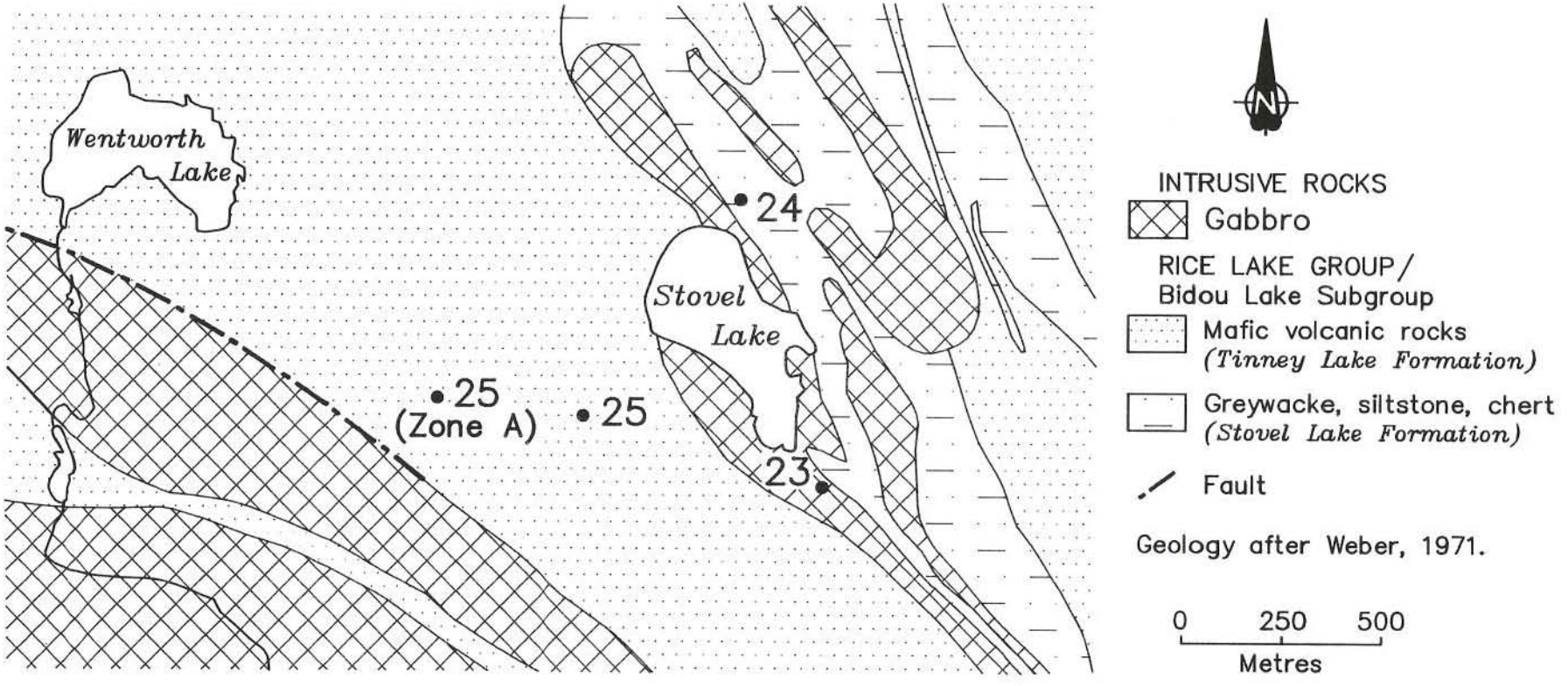


Figure 23-1: Geological setting of occurrences 23 (Marie I and II), 24 (M.W.) and 25 (Hope 7).

LOCATION: **24**

NAME: M.W.

UTM: 5641152N/338698E

ACCESS: Traverse 700 m northeast of the Hope 7 occurrence (location 25).

AREA: North of Stovel Lake (Fig. 23-1).

AIRPHOTO: A24709-231

EXPLORATION SUMMARY:

Stockwell and Lord (1939) report trenching and rock sampling on location 24 by Stovel Lake Gold Syndicate in 1936.

GEOLOGICAL SETTING:

The area is underlain by Stovel Lake Formation sedimentary rocks flanked to the east and west by Tinney Lake Formation mafic volcanic rocks. Rocks of both formations are intruded by gabbro (Fig. 23-1). At the M.W. occurrence, medium to dark green-grey, very fine- to medium-grained, weakly to strongly foliated mafic rock hosts a quartz-filled shear zone. The zone trends 305-315° with a steep northeast dip over more than 150 m strike length, and is generally less than 1.5 m thick. The vein system strikes parallel to the shear zone and dips steeply to the southwest. The quartz is white and black and constitutes a parallel system of thick veinlets, <10 to 30 cm, with a total thickness of 1 m.

MINERALIZATION:

The quartz vein does not contain sulphide mineralization; the mafic host rock contains 1-2% disseminated pyrite (Stewart, 1985).

GEOCHEMICAL DATA:

Stockwell and Lord (1939) reported assays of 5.1-29.0 g/t Au by Stovel Lake Gold Syndicate from locations 23 and 24; sampling details were not given.

CLASSIFICATION:

Vein type deposit. A quartz vein that lacks sulphide mineralization occurs in sheared, fine grained mafic rocks that contain minor pyrite.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **25**

NAME: HOPE 7

UTM: 5640582N/338438E

ACCESS: Traverse along bush trails 1.2 km east from the Hope shaft at location 1 (Central Manitoba Au Mine).

AREA: 400 m west of Stovel Lake (Fig. 23-1).

AIRPHOTO: A24709-231

EXPLORATION SUMMARY:

A series of shallow pits have been excavated at location 25; exploration details are not available.

At zone A, a trench (2.5 x 3.5 x 1.8 m) exposes a quartz vein.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks that are flanked to the west by gabbro, and to the east by Stovel Lake Formation sedimentary rocks and gabbro (Fig. 23-1). Medium- to dark green, very fine- to fine-grained, moderately to strongly foliated mafic volcanic rocks host a 5-60 cm thick quartz vein that trends 300-320° with a steep north dip over a 200 m strike length. The vein, which is white with local grey and black areas, is discontinuous, pinches and swells, and bifurcates in places.

At zone A, a 10-15 cm thick sugary white quartz vein trending approximately 300°/35°N is concordant with the regional foliation.

MINERALIZATION:

The quartz vein contains traces of disseminated pyrite and chalcopyrite, and inclusions of carbonate and chloritic wall rock. The mafic host rock is carbonatized and contains trace disseminated pyrite (Stewart, 1985).

The quartz vein at zone A is barren of sulphide minerals.

GEOCHEMICAL DATA:

A 40 cm chip sample (71A) of quartz vein containing traces of pyrite and chalcopyrite contained 67 ppb Au. Zone A was not sampled.

CLASSIFICATION:

Vein type deposit. A quartz vein with trace pyrite infills a fracture in mafic volcanic rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **26**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5638499N/344507E

ACCESS: Via boat on Beresford Lake and traverse.

AREA: 1.3 km east of Beresford Lake.

AIRPHOTO: A24709-99

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited conducted an HLEM survey and drilled DDH B-13 (51 m) on CB 5111 in 1972-73 (A.F. 91763).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation argillite. Quartz diorite of the Wanipigow River Plutonic Complex occurs to the east (Fig. 26-1). The Narrows Formation felsic fragmental rocks, Gunnar Formation mafic volcanic rocks and gabbroic sills occur to the west. Drilling intersected siltstone and greywacke; the siltstone has been locally slightly altered to garnetiferous amphibole schist, and quartz and biotite are abundant in both rock types (A.F. 91763). Minute epidote stringers and minor graphite occur in the greywacke.

MINERALIZATION:

A 2.1m intersection of drill core contained 3% fine grained pyrite and 3% pyrrhotite disseminated in quartz- and biotite-rich siltstone. Further downhole, 0.75 m of siltstone contained 20% graphite and minor garnets, but sulphide mineralization was not observed (A.F. 91763).

GEOCHEMICAL DATA:

Drill logs note one assay consisting of 1.5 m siltstone with minor disseminated pyrite and pyrrhotite grading 0.02% Cu and 0.7 g/t Au (A.F. 91763).

CLASSIFICATION:

Disseminated mineralization - not classified. Minor Fe-sulphide minerals are disseminated in 2.1 m of quartz-biotite siltstone. A separate graphitic zone is hosted by siltstone.

REFERENCES:

Assessment File 91763
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **In** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

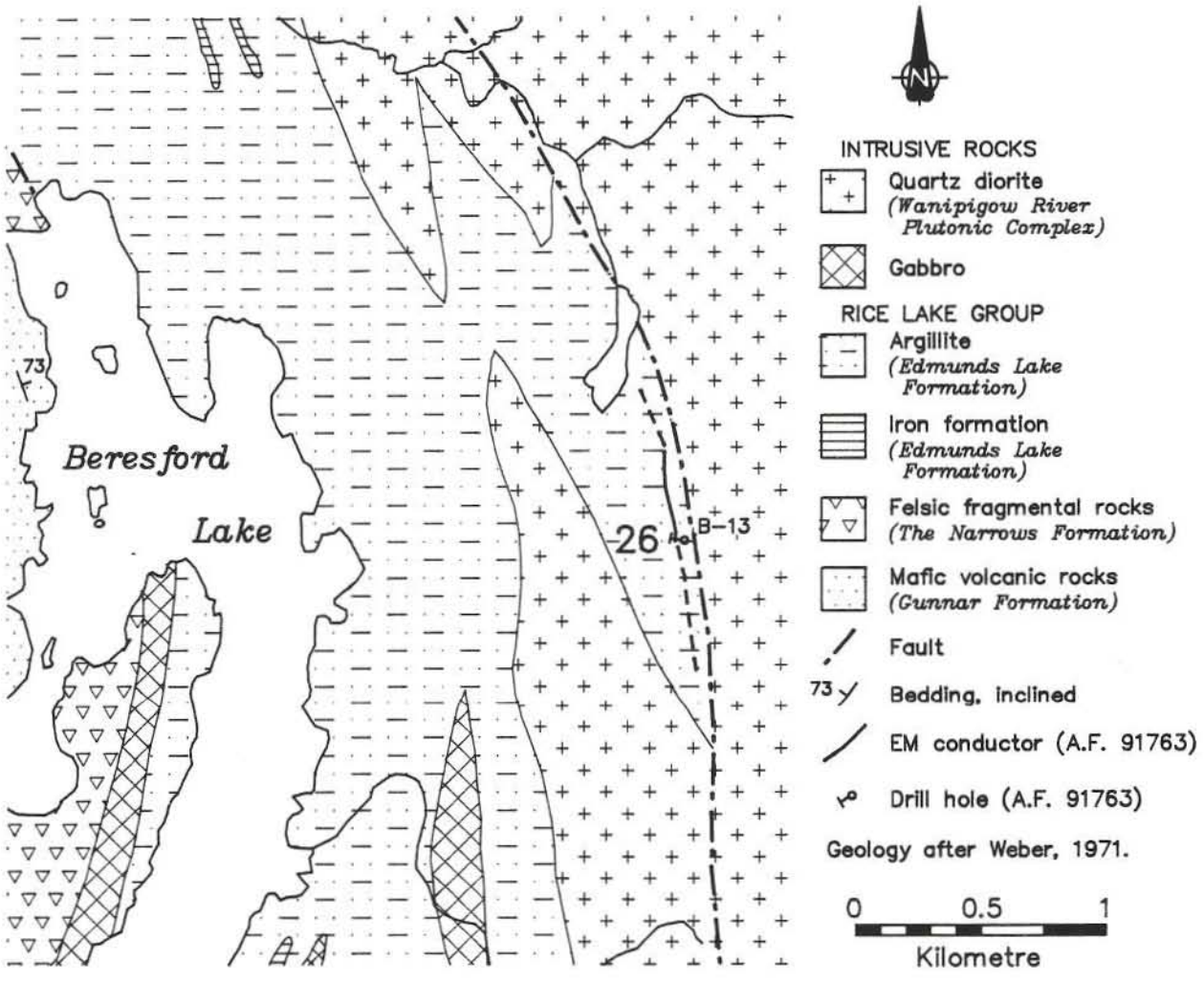


Figure 26-1: Geological setting and drill hole location at occurrence 26.

LOCATION: **27**

NAME: MOORE LAKE
UTM: 5644143N/339085E
ACCESS: Traverse 2.0 km east of Provincial Road 304.

AREA: 300 m west of Moore Lake
AIRPHOTO: A24709-229

EXPLORATION SUMMARY:

A single trench, 3 x 10 x 1 m, is present at the occurrence, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain predominantly by The Narrows Formation fragmental felsic volcanic rocks flanked by Gunnar and Tinney Lake formations mafic volcanic rocks and intruded by gabbro sills (Fig. 27-1). At the occurrence, a shear zone, <2 m wide, is hosted by fine- to medium-grained massive mafic rocks. The zone is oriented 305°/75° and is traceable for approximately 40 m along strike. Very fine grained, black to grey, imperfectly laminated, siliceous rock occurs within the shear zone. These rocks have a cherty appearance due to their laminated and siliceous character. This is probably due to silicification associated with the zone of shearing, rather than primary lithologic character. In addition, host rocks in the shear zone are moderately to strongly foliated, chloritized, carbonatized, and contain black and white sugary quartz veins, <0.2 m wide. The quartz veins are locally Fe oxide stained and contain chloritic wall rock inclusions.

MINERALIZATION:

Less than 1% pyrite occurs locally in the siliceous rock within the shear zone (Stewart, 1985).

GEOCHEMICAL DATA:

A 1.4 m chip sample of siliceous cherty rock with minor quartz veins and local pyrite contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. A shear zone with discontinuous quartz veins and trace pyrite occurs in massive mafic, probably volcanic, rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **In** Manitoba Energy and Mines, Geological Services, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **In** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

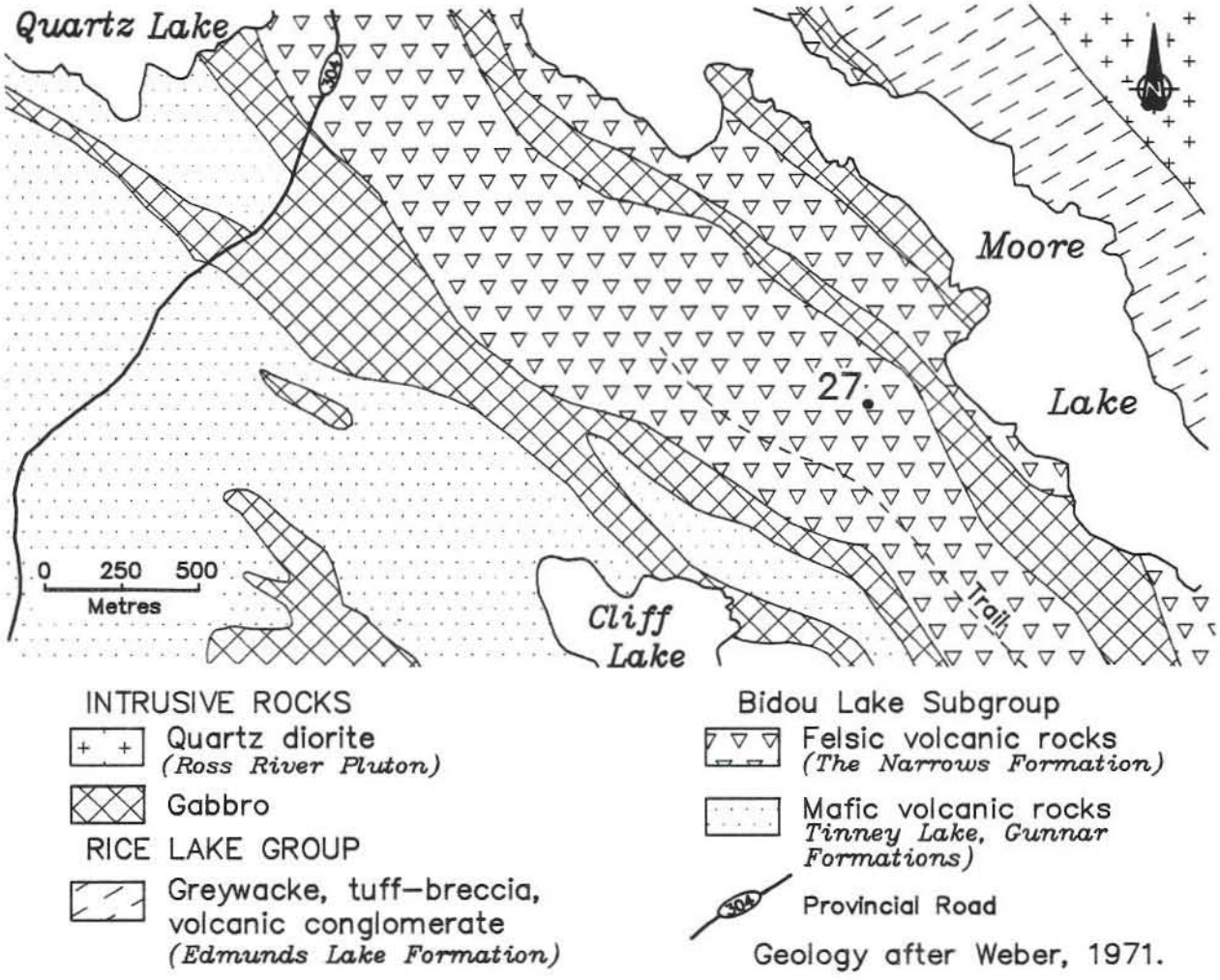


*Figure 27-1: **Geological setting of occurrence 27 (Moore Lake).***

LOCATION: **28**

NAME: NORTH STAR
UTM: 5641435N/333224E
ACCESS: Traverse 2.1 km west-southwest along powerline from the abandoned Central Manitoba Au minesite.

AREA: South of Halfway Lake.
AIRPHOTO: A24710-40

EXPLORATION SUMMARY:

Surface stripping, test pitting and approximately 330 m of diamond drilling (records unavailable) were undertaken by Walton Gold Limited in 1934 (Stockwell and Lord, 1939). Details of further development, including sinking of an exploration shaft (depth unknown), are not recorded. A capped shaft, abandoned buildings and equipment remain at the site.

GEOLOGICAL SETTING:

The area is underlain by gabbro, which is in fault contact to the east with mafic volcanic rocks of the Tinney Lake Formation (Fig. 28-1). Fine- to medium-grained, anorthositic to gabbroic intrusive rocks (Wright, 1932) are transected by a fracture zone that is 3 m thick, strikes approximately 300° for over 250 m, and is infilled by a discontinuous quartz vein. The quartz vein is a white to bluish-grey, 10-60 cm thick, discontinuous series of lenses that contain thin streaky inliers of schistose wall rock.

MINERALIZATION:

Up to 10% pyrite is disseminated in vugs and fractures within the quartz vein. Rare malachite stains also occur in the quartz vein (Stewart, 1985).

GEOCHEMICAL DATA:

Results of Au analysis for three chip samples are given in Table 28-1.

CLASSIFICATION:

Vein type deposit. A discontinuous auriferous quartz vein with minor pyrite is emplaced in a fracture in gabbro.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.
1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

Table 28-1: Au contents in samples from location 28

Sample No.	Sample Type	Rock Type	Mineralization	Au Content
73A	1 m chip	quartz vein	minor py, malachite	32 ppb
74A	1 m chip	sheared gabbro, minor quartz	minor py	11.69 g/t
75A	0.5 m chip	quartz vein, blue-black	tr. py	2.0 g/t

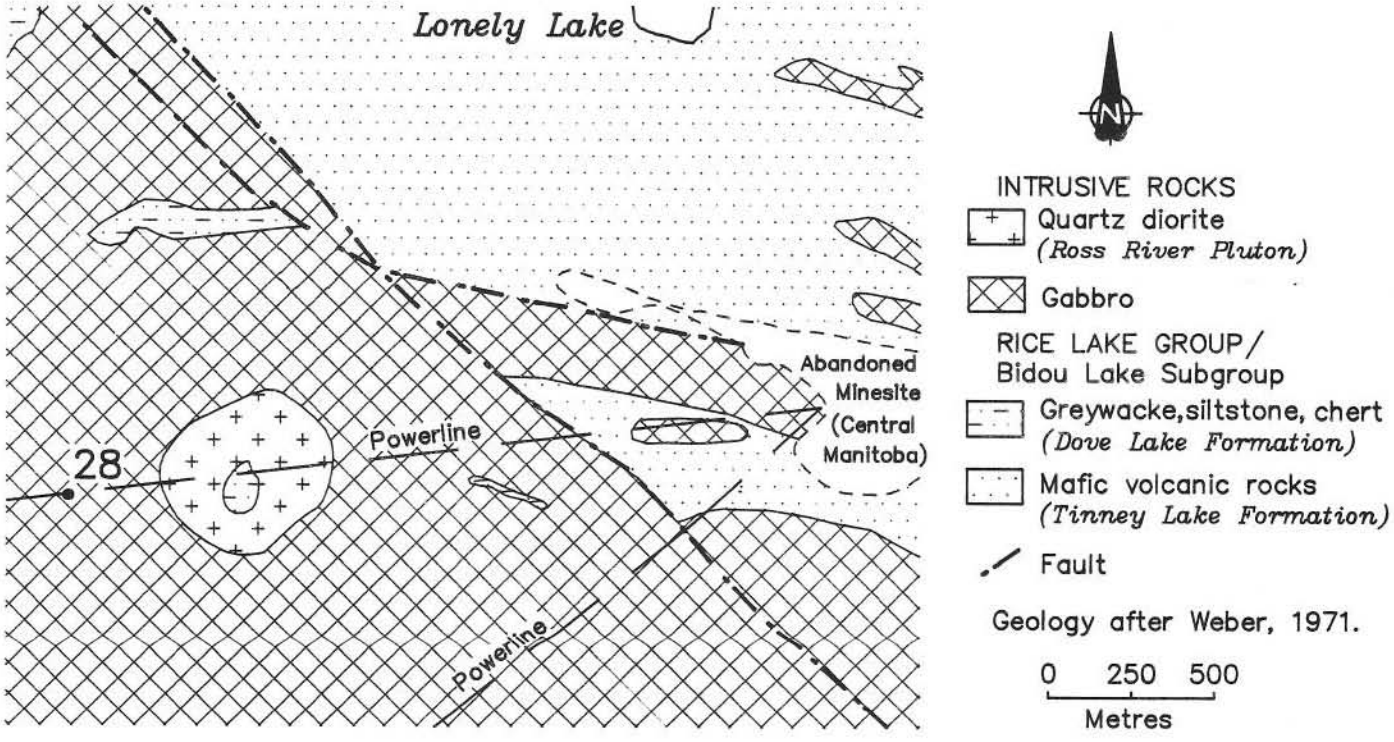


Figure 28-1: Geological setting of occurrence 28 (North Star).

LOCATION: **29**

NAME: LAKESHORE
UTM: 5644438N/334596E
ACCESS: Via boat on Halfway Lake and traverse.

AREA: Northeast of Halfway Lake.
AIRPHOTO: A24710-42

EXPLORATION SUMMARY:

Exploration details are not known for this occurrence.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake and Gunnar formations mafic volcanic rocks flanked to the northwest by a gabbroic pluton. A small gabbro outlier is exposed immediately east of the mineralized zone (Fig. 29-1). Medium to dark green, massive to moderately foliated mafic volcanic rocks host a 350°-trending, milky-white quartz vein that is 5 m thick and at least 0.5 km long. Subordinate parallel and subparallel quartz veinlets occur adjacent to the main quartz vein.

MINERALIZATION:

Up to 2% pyrite and rare malachite stains occur irregularly in the quartz vein. The vein also contains chloritic and rust-stained wall rock inclusions (Stewart, 1985).

GEOCHEMICAL DATA:

A 2 m chip sample of the quartz vein with trace pyrite contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. A quartz vein with minor pyrite infills a fracture in mafic volcanic rocks.

REFERENCES:

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

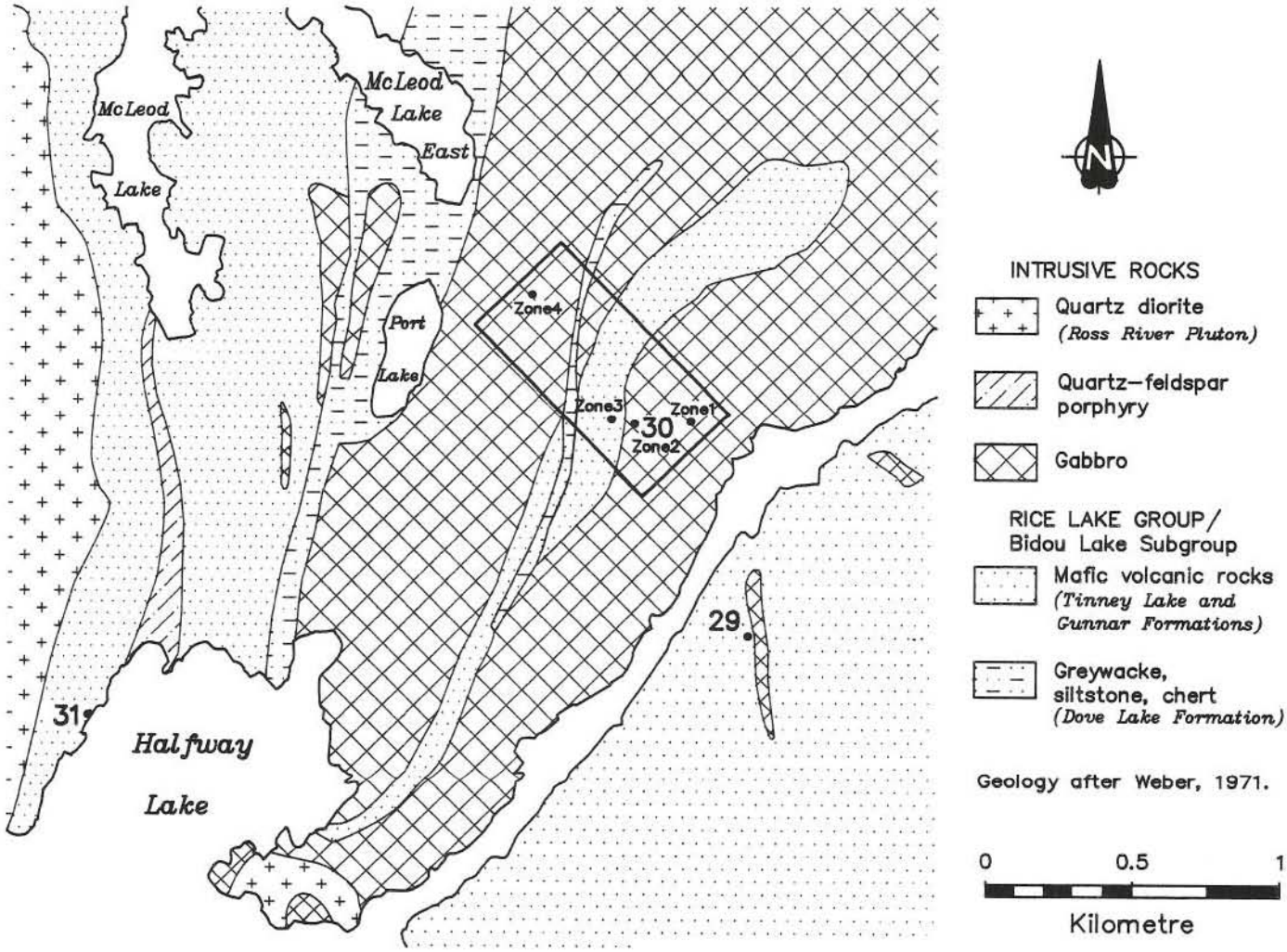


Figure 29-1: Geological setting of occurrences 29, 30 and 31 (Macketta).

LOCATION: **30**

NAME: PORT

UTM: Zone 1: 5645087N/334231E
Zone 2: 5645140N/334080E
Zone 3: 5645520N/333800E
Zone 4: 5645500N/333850E

ACCESS: Via boat on Halfway Lake and traverse.

AREA: East of Port Lake (Fig. 29-1).

AIRPHOTO: A24710-43

EXPLORATION SUMMARY:

Linecutting, prospecting, re-blasting and sampling of old trenches were carried out on the Bear claim group by Summit Oils Limited in 1969-70 (A.F. 92084). No other exploration records are known for this occurrence. Zone 1 consists of a 2x0.75x0.5 m trench on the ledge of an escarpment. Zone 2 consists of three trenches (13x1x0.8 m; 6x1x1 m; 3.5x2x1.6 m), and a few additional small excavations in overburden. Zone 3 is marked by three trenches (13x1x0.8 m; 6x1x1 m; 3.5x2x1.6 m); one trench (15x1x0.8 m) is present at Zone 4.

GEOLOGICAL SETTING:

The area is underlain by gabbro, Tinney Lake and Gunnar formations mafic volcanic rocks and Dove Lake Formation sedimentary rocks (Fig. 29-1). The four zones comprising location 30 are hosted by fine- to medium-grained inhomogeneous mafic rocks composed of chloritized hornblende and approximately 20% plagioclase. Up to 5 mm blue quartz 'eyes', 1-5 mm, are randomly distributed throughout the mafic rocks. Light green-grey, cherty laminated rocks are commonly interdigitated as metre-thick layers with the mafic rocks. North- to northeast-striking shear zones transecting these rocks host discontinuous quartz veins.

MINERALIZATION:

Zone 1. Zone 1 contains trace fine grained pyrite disseminated in mafic flow(?) rocks and in 1-2 cm thick, 10-20 cm long quartz lenses and ribbons.

Zone 2. Pyrite and pyrrhotite, 1-2%, occur in mafic igneous rocks and in quartz lenses and ribbons up to 0.7 m thick. The host rocks in the vicinity of the quartz veins are weakly chloritized and carbonatized.

Zone 3. 1-2% pyrite is present in massive mafic rocks hosting a 10-30 cm thick quartz vein up to 50 m long. The mafic rock is intensely silicified in the immediate vicinity of the trench.

Zone 4. Quartz rubble contains trace disseminated pyrite and is locally rust stained. Quartz veins were not observed *in situ*. Fine- to medium-grained slightly foliated mafic rock is exposed in the trench (Stewart, 1985).

GEOCHEMICAL DATA:

Gold contents of several chip and grab samples from Zones 2-4 are given in Table 30-1. No samples were collected from Zone 1. Samples collected by Summit Oils Limited were analyzed for Au, Ag and Cu (A.F. 92084); results are given in Table 30-2.

CLASSIFICATION:

Vein type deposit. Small discontinuous auriferous quartz veins with minor Fe-sulphide minerals infill fractures in mafic rocks.

REFERENCES:

Assessment File 92084
Manitoba Energy and Mines, Minerals Division.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Table 30-1: Au contents in samples from location 30

Occurrence	Sample No.	Sample Type	Rock Type	Mineralization	Au Content
Zone 2	85-81A	5 m chip	mafic host	1% py-po	102 ppb
Zone 2	85-82A	0.7 m chip	quartz vein	1% py	4.2 g/t
Zone 3	85-83B	2 m chip	mafic host	tr. py	39 ppb
Zone 3	51-6-B6	grab	quartz rubble	rusty	1.7 g/t
Zone 4	85-84A	4 m chip	mafic host	1% py	159 ppb

Table 30-2: Au, Ag and Cu analyses for samples from location 30 (Summit Oils Limited, A.F. 92084)

Sample No.	Zone	Au	Ag	Cu
19451	Zone 4	340 ppb	680 ppb	N.A.
19453	Zone 3	tr.	1.5 g/t	N.A.
19454	Zone 2	tr.	1.4 g/t	0.04%

N.A. - not analyzed

LOCATION: **31**

NAME: MACKETTA
UTM: 5644143N/332206E
ACCESS: Via boat on Halfway Lake.

AREA: Southwestern Halfway Lake (Fig. 29-1).
AIRPHOTO: A24712-42

EXPLORATION SUMMARY:

The occurrence was first recorded in 1926. Rock samples collected in 1934 returned concentrations of up to 3.6 g/t Au. Seven drill holes totalling 274 m were drilled by Macketta Gold Mines Limited in 1938 (A.F. 91339). The holes delineated a quartz-filled zone 0.85 m thick and approximately 137 m long, averaging 11 g/t Au to a depth of at least 122 m (Min. Inv. Card 52L/14 Au14). In 1963 Gunnex Limited conducted magnetometer and EM surveys, prospecting, sampling and 1:2400 geological mapping (A.F. 91113). Ten trenches were located at the occurrence in 1986.

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation massive to incipiently pillowed mafic volcanic rocks, flanked by Ross River Pluton granodiorite to quartz diorite to the west, gabbro to the east, and intruded by quartz-feldspar porphyry (Fig. 29-1). The contact of the mafic volcanic rocks with the Ross River Pluton is gradational over several tens of metres as evidenced by hybrid igneous-volcanic rock phases, mafic volcanic screens and mafic relicts. A shear zone up to 1 m thick and traceable for 330 m along strike transects mafic volcanic rocks and Ross River Pluton granodiorite (Fig. 31-1). The shear zone strikes west-northwest and dips 60°S. The intensity of foliation diminishes markedly within the intrusive rocks. Quartz is present in the shear zone as thin (1-3 cm) ribbons and boudins parallel to foliation. Quartz lenses contain numerous fragments of the wall rocks. In addition to the main Macketta vein, locally there are several subordinate subparallel or parallel quartz veins.

MINERALIZATION:

Mineralization consists of very localized occurrences of disseminated pyrite, chalcopyrite and rare crystals of sphalerite in quartz. "Very finely divided free gold" was reported from a few locations (A.F. 91339), however, this could not be confirmed during field observations. Silicification, sericitization and carbonatization of the wall rocks are restricted to a 2-3 m thick zone straddling the shear zone.

GEOCHEMICAL DATA:

Samples collected from exploration pits by Gunnex Limited (A.F. 91113) contained:

Sample length (m)	Au content
0.2	690 ppb
0.4	1 g/t
0.13	7.9 g/t
0.6	340 ppb
0.6	48 g/t
0.7	6.8 g/t
0.85	6.8 g/t
0.4	3.7 g/t
0.4	32.6 g/t
0.6	nil

Gold concentrations in core drilled by Macketta Gold Mines in 1938 are similar to those listed above; however, the results are not reproduced here because of (1) discrepancies in drill hole locations between maps and the accompanying report (A.F. 91113), and (2) the lack of data for the length of analyzed samples.

A 1 m chip sample across a quartz vein and mafic volcanic host rock barren of sulphide minerals contained 319 ppb Au.

CLASSIFICATION:

Vein type deposit. An auriferous quartz vein with trace sulphide minerals occurs in a fracture zone in mafic volcanic rocks.

REFERENCES:

Assessment Files 91113, 91339
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 52L/14 Au14
Manitoba Energy and Mines, Minerals Division.

Stewart, P.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

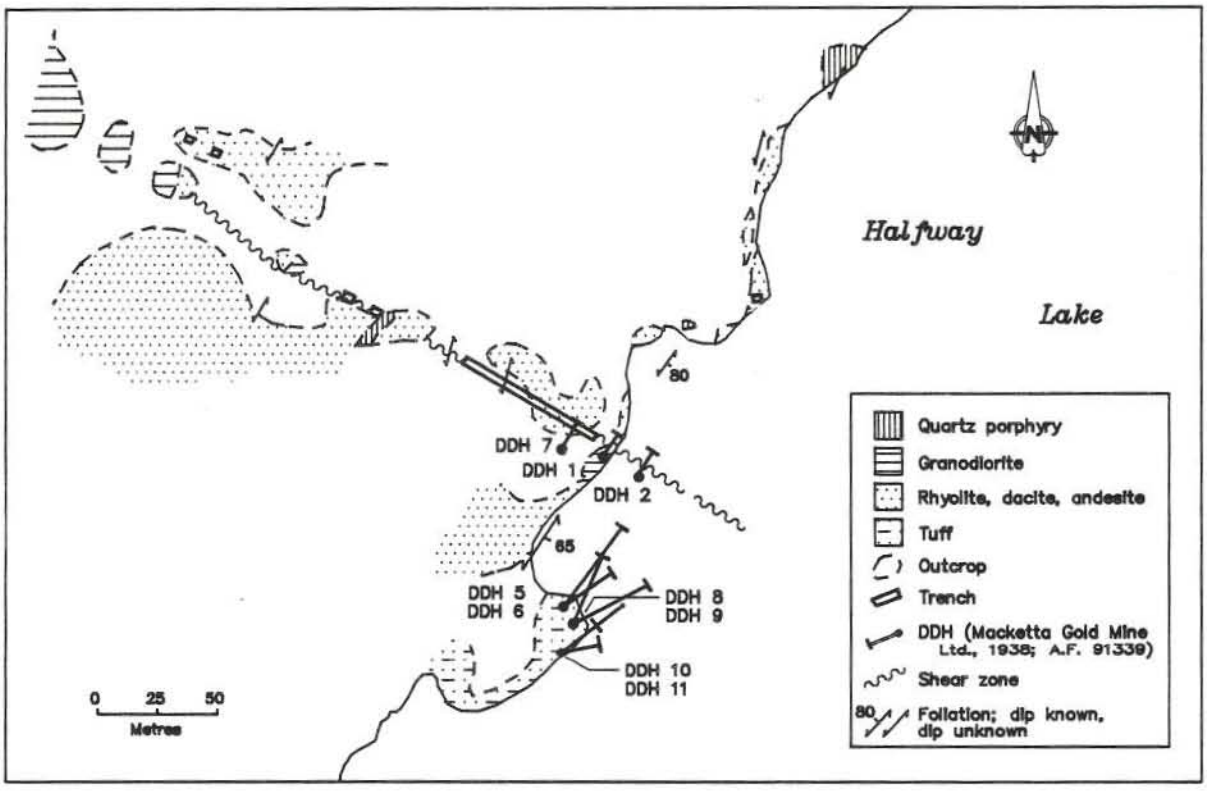


Figure 31-1: Detailed geology and drill hole locations at occurrence 31 (Macketta).

LOCATION: **32**

NAME: INGRID/ STIBNITE

UTM: 5635834N/333453E

ACCESS: Via vehicle approximately 4 km along an abandoned logging road starting from Provincial Road 314 less than 200 m south of the Manigotagan River culverts.

AREA: Southeast of Long Lake.

AIRPHOTO: A24710-36

EXPLORATION SUMMARY:

Minor amounts of inhomogeneously distributed gold are known from this occurrence (W.J. Conley, pers. comm., 1988). Esso Resources Canada Limited initiated an overburden stripping, mapping, trenching and sampling program in 1985.

GEOLOGICAL SETTING:

The area is underlain predominantly by Edmunds Lake Formation sedimentary rocks flanked to the northeast by The Narrows Formation quartzofeldspathic tuff (Fig. 32-1). The occurrence is hosted by a fine- to medium-grained, foliated, inhomogeneous mafic unit 1400 m long and 50-100 m wide, and by light grey, reworked volcaniclastic rocks trending 290-295°. Owens and Seneshen (1985) mapped the mafic unit as a gabbroic intrusion; however, Stewart (1985) observed possible pillows, vesicles and amygdules. A series of 090°-striking shear zones up to 2 m wide and 200 m long crosscut stratigraphy.

MINERALIZATION:

Several distinctly different styles of mineralization are present.

1) Up to 20% pyrite and lesser arsenopyrite occur in the prominent, friable, rusty weathered shear zones, accompanied by carbonatization and silicification; only very minor quartz vein material is present.
2) A quartz vein occurs in the gabbroic unit parallel to foliation, but is unrelated to the shear zones. Up to 15% pyrite and lesser arsenopyrite occur in 2-5 cm wide, discontinuous lenses in the gabbro within 50 cm of this vein.
3) Late, stibnite-bearing quartz veins and 1-5 cm thick, massive stibnite veins crosscut mineralized and non-mineralized shear zones in both mafic intrusive and volcaniclastic rocks.
4) Stibnite is disseminated in altered mafic rocks. The stibnite mineralization is related to a late, post-shearing extensional event.

GEOCHEMICAL DATA:

Two grab samples were collected: (1) light grey reworked volcaniclastic rock with 20% arsenopyrite and minor pyrite contained 2.7 g/t Au, and (2) mafic rock with up to 15% pyrite contained 215 ppb Au.

CLASSIFICATION:

Vein type deposit. Complex multiphase Au-As-Sb vein type mineralization occurs in fracture zones in a mafic rock.

REFERENCES:

Owens, D.J. and Seneshen, D.M.

1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Mineral Resources Division, Preliminary Map 1985R-1, 1:10 000.

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **In** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

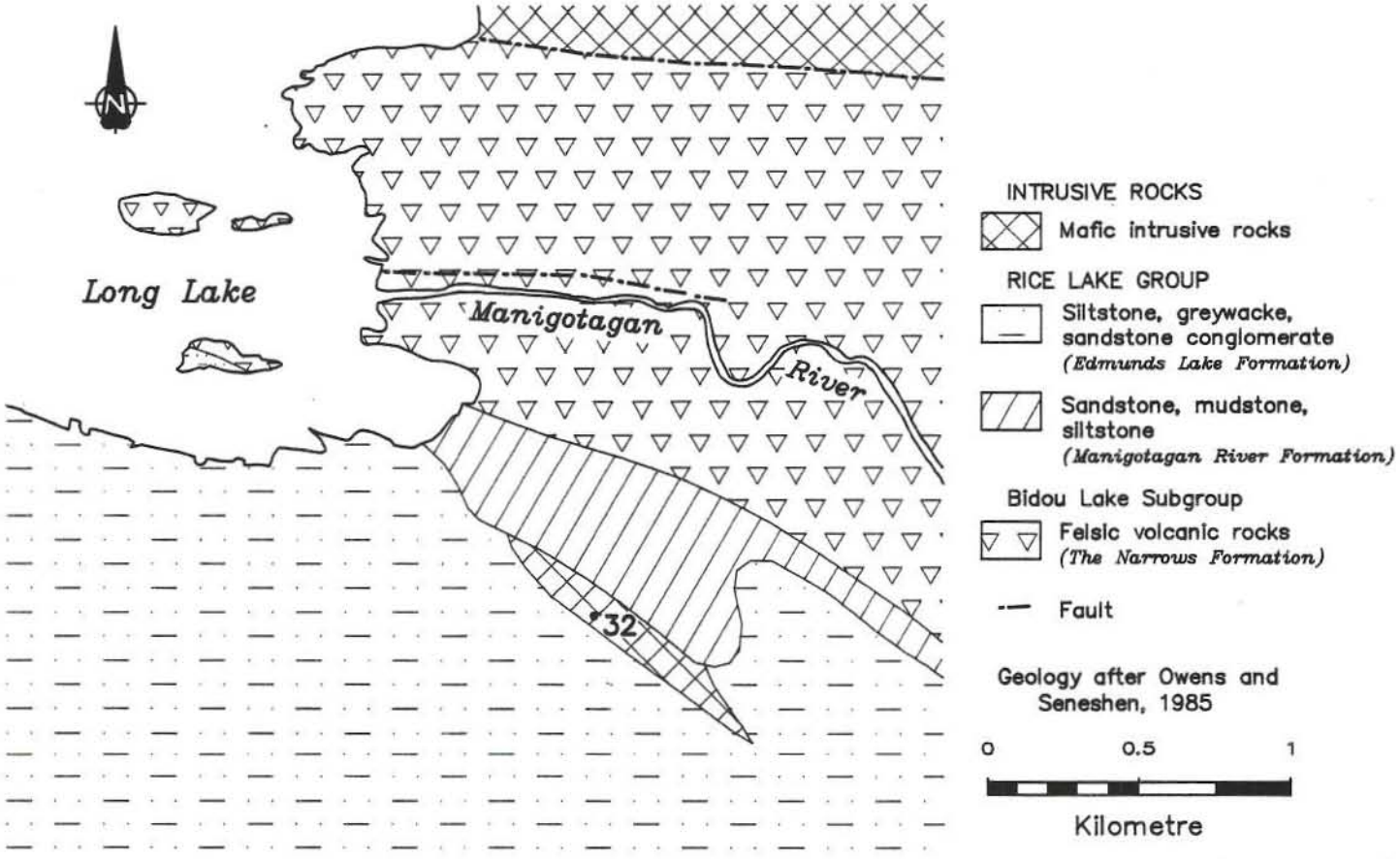


Figure 32-1: Geological setting of occurrence 32.

LOCATION: **33**

NAME: NORTH CLIFF

UTM: 5643172N/337940E

ACCESS: Via boat on Cliff Lake. This lake can be accessed by a poorly defined bush trail from Provincial Road 304 approximately 1.4 km south of the culvert in the creek that joins Quartz and Moore lakes.

AREA: North shore of Cliff Lake.

AIRPHOTO: A24709-230

EXPLORATION SUMMARY:

Minor outcrop stripping and shallow trenching have been conducted at this location, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks. Thinner units of Stovel Lake Formation sedimentary rocks occur to the south; both formations are intruded by numerous small gabbro stocks (Fig. 33-1). The occurrence is hosted by light to dark green, fine grained, moderately foliated, mafic to intermediate volcanic rocks.

MINERALIZATION:

Up to 5% pyrite occurs as inhomogeneously disseminated fine- to medium-grained crystals on fracture surfaces, and as clusters up to 1.5 cm in a slightly silicified zone within the mafic volcanic rocks. Magnetite is disseminated in the sulphide-bearing silicified zone (Stewart, 1985).

GEOCHEMICAL DATA:

A 1.5 m chip sample of slightly silicified mafic volcanic rock with 1-5% pyrite contained <12 ppb Au.

CLASSIFICATION:

Disseminated mineralization - not classified. Minor pyrite occurs in a slightly silicified zone in mafic volcanic rocks.

REFERENCES:

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

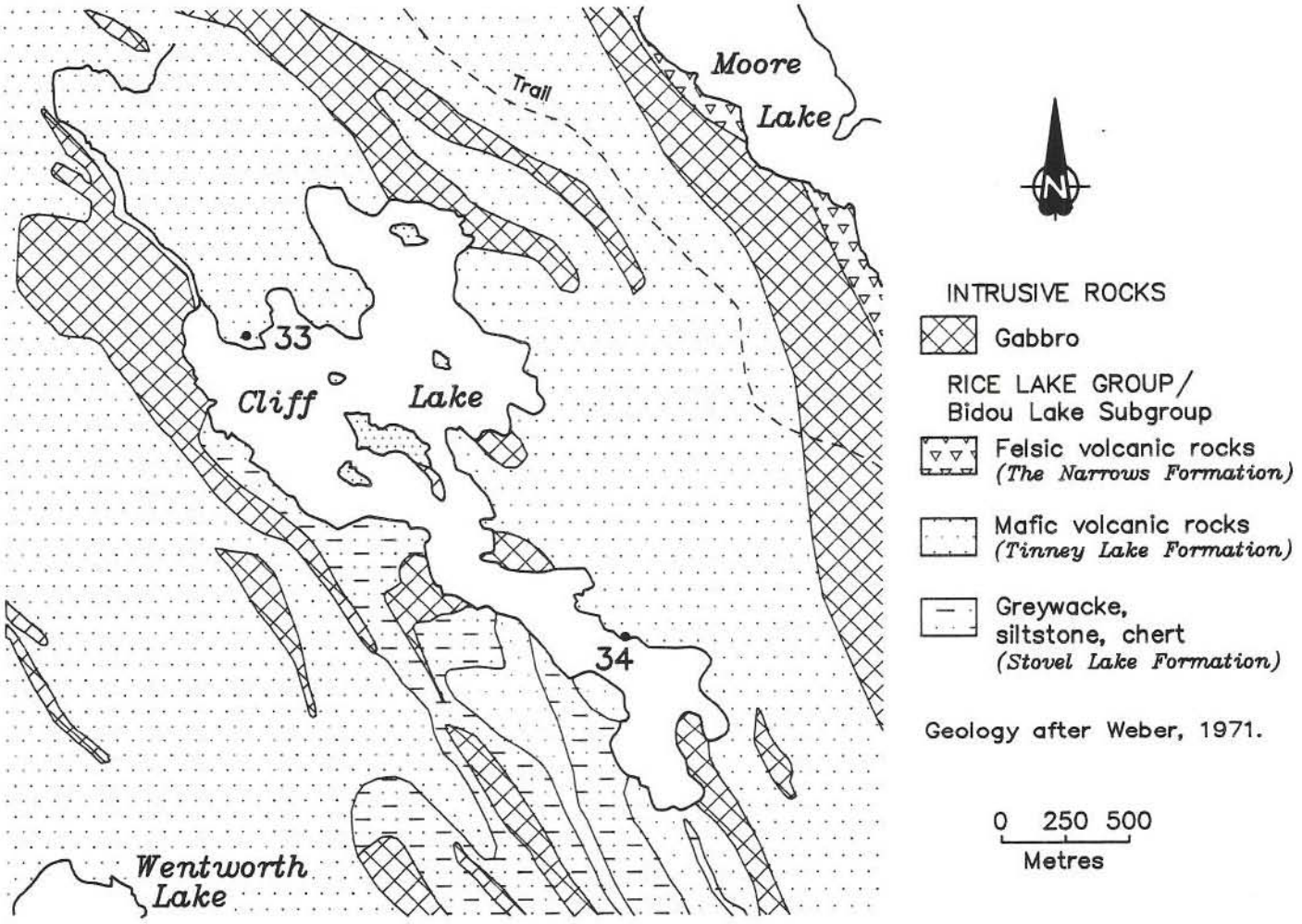


Figure 33-1: Geological setting of occurrences 33 and 34.

LOCATION: **34**

NAME: CLIFF 1

UTM: 5642206N/339161E

ACCESS: Traverse along a poorly defined bush trail from Provincial Road 304 approximately 1.4 km south of the culvert in the creek joining Quartz and Moore lakes.

AREA: Cliff Lake (Fig. 33-1).

AIRPHOTO: A24709-230

EXPLORATION SUMMARY:

A VLF-EM survey was conducted in the area by W.C. Hood and S. Parker in 1985 (A.F. 92653). A trench (ca. 1983-85?) has been excavated at the occurrence.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks and thinner units of Stovel Lake Formation sedimentary rocks. These rocks are intruded by numerous small gabbro bodies (Fig. 33-1). Medium green-grey, very fine grained, moderately to strongly foliated mafic tuff, locally with poorly defined laminae, hosts a milky white to dark grey quartz vein up to 1.2 m thick and approximately 3.5 m long.

MINERALIZATION:

Trace pyrite and minor Fe-oxide stains occur in the quartz vein and on fracture planes in the tuffaceous host rock adjacent to the quartz vein (Stewart, 1985).

GEOCHEMICAL DATA:

A 1.2 m long chip sample of quartz vein with trace pyrite contained 22 ppb Au.

CLASSIFICATION:

Vein type deposit. A quartz vein containing trace pyrite is hosted by mafic volcanic rocks.

REFERENCES:

Assessment File 92653
Manitoba Energy and Mines, Minerals Division.

Stewart, P.W.
1985: Mineral occurrence documentation in the Rice Lake greenstone belt; In Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

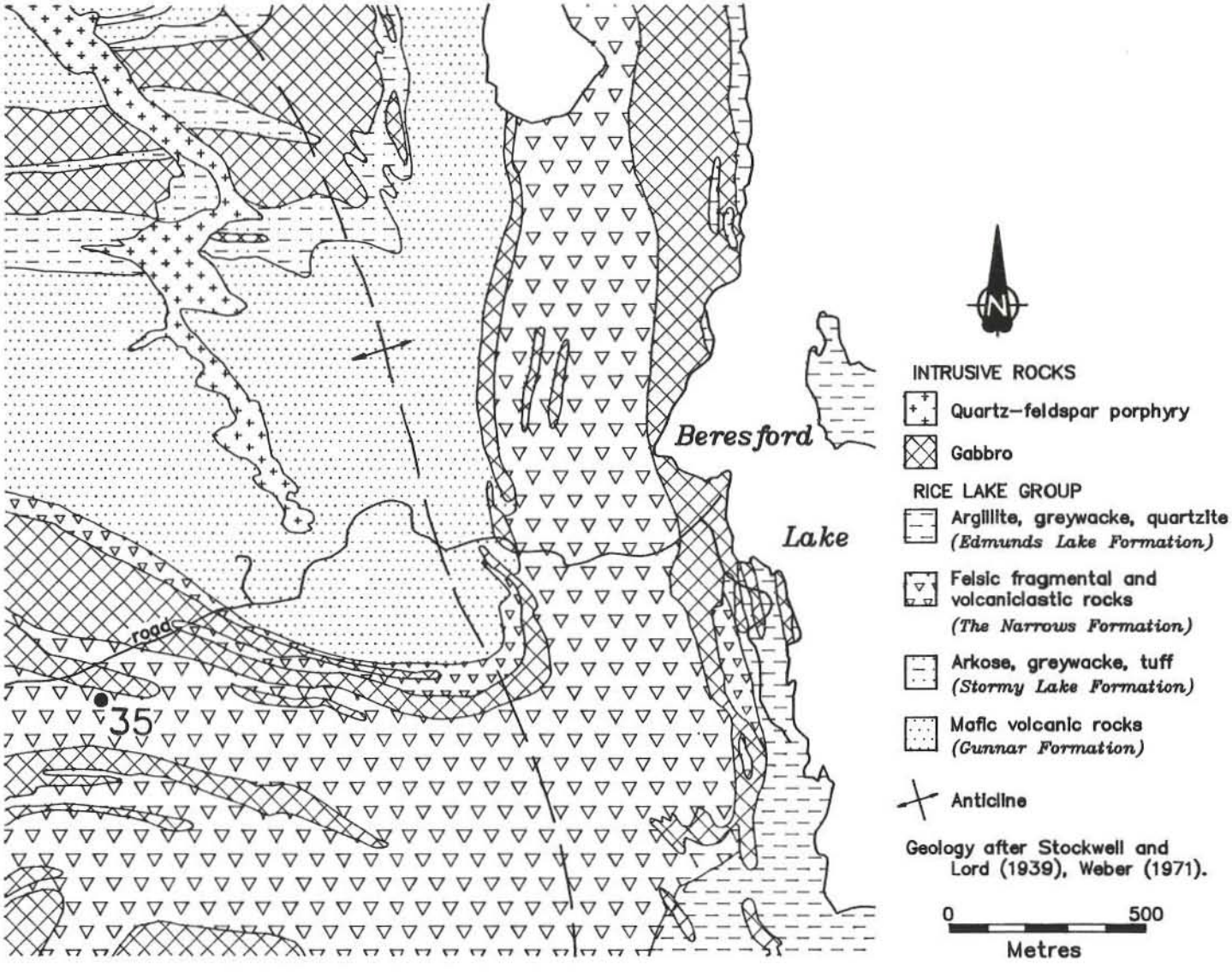


Figure 35-1: Geological setting of occurrence 35.

LOCATION: **35**

NAME: BERESFORD 1

UTM: 5636254N/340418E

ACCESS: Traverse approximately 200 m south of the Beresford Lake access road.

AREA: 1.6 km west of Beresford Lake.

AIRPHOTO: A24709-172

EXPLORATION SUMMARY:

Seven trenches have been excavated at the occurrence, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by The Narrows Formation felsic volcanic fragmental rocks that are underlain to the north by Gunnar Lake Formation mafic volcanic rocks and overlain by Edmunds Lake Formation sedimentary rocks to the east and south (Fig. 35-1). The volcanic sequence is intruded by numerous gabbroic sills. Rocks in the area occupy the hinge of an anticline;the axial plane strikes northerly and plunges to the southeast.

Interbedded felsic to intermediate tuff and lapilli tuff host a series of short discontinuous shear zones that contain quartz veins and lenses. A fine grained mafic dyke with local chilled margins intruded the volcaniclastic rocks. The shear zones are up to 1.5 m wide and are traceable over a strike length of approximately 100 m. Lithologic contacts, including the orientation of a mafic dyke, elongation of lapilli, foliation and shearing are subparallel. Quartz occurs in extensional veins, <10 cm thick, some of which postdate foliation and shearing, and light green siliceous lenses that may be quartz veins or silicified areas.

MINERALIZATION:

Fine- to coarse-grained pyrite veinlets, 2-4 mm wide, occur locally within the shear zones. Fine- to coarse-grained euhedral pyrite, <1%, is disseminated in both sheared and nonsheared fragmental rocks and the mafic dyke (Stewart, 1985).

GEOCHEMICAL DATA:

One 1 m long chip and two grab samples of pyrite-bearing quartz veins contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. Trace pyrite occurs as veinlets in quartz lenses in shear zones, and as disseminations in felsic to intermediate fragmental rocks.

REFERENCES:

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

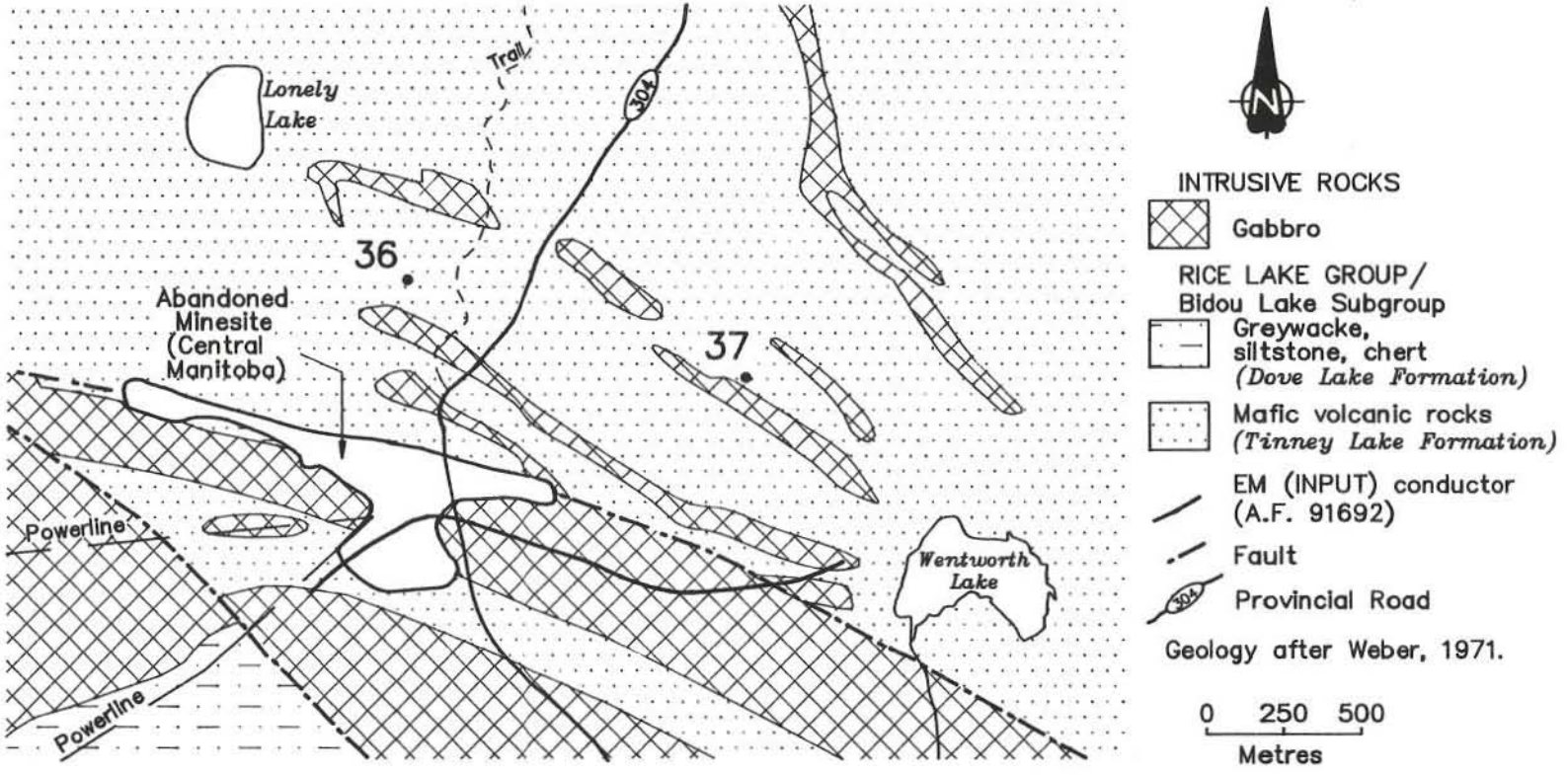


Figure 36-1: Geological setting of occurrences 36 (Bear) and 37 (Albena).

LOCATION: **36**

NAME: BEAR 1

UTM: 5642248N/335574E

ACCESS: Via Provincial Road 304 600 m north of the abandoned Central Manitoba Au minesite (location 1), and traverse 350 m west.

AREA: 0.6 km southeast of Lonely Lake.

AIRPHOTO: A24670-99

EXPLORATION SUMMARY:

Location 36 is mentioned briefly in Stockwell and Lord (1939), but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks that are intruded by gabbro sills (Fig. 36-1). Fine- to medium-grained mafic volcanic(?) rocks host a 340°-striking shear zone that is traceable for approximately 70 m along strike. The mafic rocks are characterized by massive zones interdigitated with metre-thick foliated zones. The shear zone contains a 30-120 cm thick white quartz vein that contains common "ribbon-like" chloritic wall rock inclusions.

MINERALIZATION:

The quartz vein hosts only trace pyrite; 1% pyrite is disseminated in the sheared host rocks. Malachite stains occur locally in quartz rubble. Both the quartz vein and wall rocks contain accessory carbonate and local Fe-oxide stains (Stewart, 1985).

GEOCHEMICAL DATA:

A 1.2 m chip sample (89-85-96A) of quartz vein with trace pyrite and Fe-oxide stains contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. A quartz-filled shear zone in mafic volcanic rocks contains trace pyrite.

REFERENCES:

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.

1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **37**

NAME: ALBENA

UTM: 5641890N/336954E

ACCESS: Via traverse approximately 900 m east of Provincial Road 304.

AREA: Northwest of Wentworth Lake (Fig. 36-1).

AIRPHOTO: A24670-99

EXPLORATION SUMMARY:

Stockwell and Lord (1939) briefly describe the Albena claim, but exploration details are not known. A series of pits, trenches and stripped outcrops are present at the occurrence.

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation mafic volcanic rocks that are intruded by gabbro sills (Fig. 36-1). Massive to moderately foliated basaltic to andesitic volcanic rocks host a series of discontinuous quartz veins associated with zones of intense foliation. The foliation trends 320-330°, but the main vein system strikes 350-360°, crosscutting the foliation. Contacts between the quartz veins and the host rocks are sharp and unaltered. The veins are 10 cm to 1.5 m thick, generally 1-5 m long and pinch and swell irregularly. One vein is traceable for up to 100 m along strike.

MINERALIZATION:

Less than 1% pyrite is disseminated in the foliated host rocks; quartz veins lack sulphide mineralization but may contain accessory buff carbonate (Stewart, 1985).

GEOCHEMICAL DATA:

A 2 m chip sample (85-97A) of quartz vein with minor carbonate contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. Multiple quartz veins occur in strongly foliated mafic to intermediate volcanic rocks with trace pyrite.

REFERENCES:

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

Stockwell, C.H. and Lord, C.S.

1939: Halfway Lake-Beresford Lake area, Manitoba; Geological Survey of Canada, Memoir 219, 67p.

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **38**

NAME: LOST

UTM: 5634117N/337262E

ACCESS: Traverse 400 m west of Provincial Road 314 from the culverts in the Manigotagan River.

AREA: North of the Manigotagan River.

AIRPHOTO: AS85054-32

EXPLORATION SUMMARY:

Four trenches (0.5x0.5x25 m; 2.0x1.0x0.25 m; 1.5x1.5x0.25 m; 3.5x1.0x0.5 m) are present at the occurrence, but exploration details are not known.

GEOLOGICAL SETTING:

The area is underlain by gabbro sills that intrude The Narrows Formation felsic volcanic rocks (Fig. 38-1). Fine- to coarse-grained, weakly foliated gabbroic intrusive rocks contain numerous sugary white quartz lenses and veins generally parallel to foliation (Fig. 38-2).

MINERALIZATION:

Pyrrhotite and pyrite, 1-2%, are disseminated in quartz, preferentially at the contact between the veins and wall rocks. Rare malachite stains occurs locally. The quartz is vuggy in places and contains abundant chloritized wall rock inclusions and sericitized feldspathic fragments. Quartz veins are concentrated in an area approximately 20 x 8 m.

GEOCHEMICAL DATA:

A grab sample (51-6-B41) of quartz with abundant chlorite and sericite, 0.5% pyrite and trace chalcopyrite contained 3 ppb Au. Three additional samples (locations shown in Figure 38-2) contained <12 ppb Au.

CLASSIFICATION:

Vein type deposit. Multiple quartz veins with minor Fe-sulphide minerals occur in gabbro.

REFERENCES:

Owens, D.J., and Seneshen, D.M.

1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Stewart, P.W.

1985: Mineral occurrence documentation in the Rice Lake greenstone belt; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 133-147.

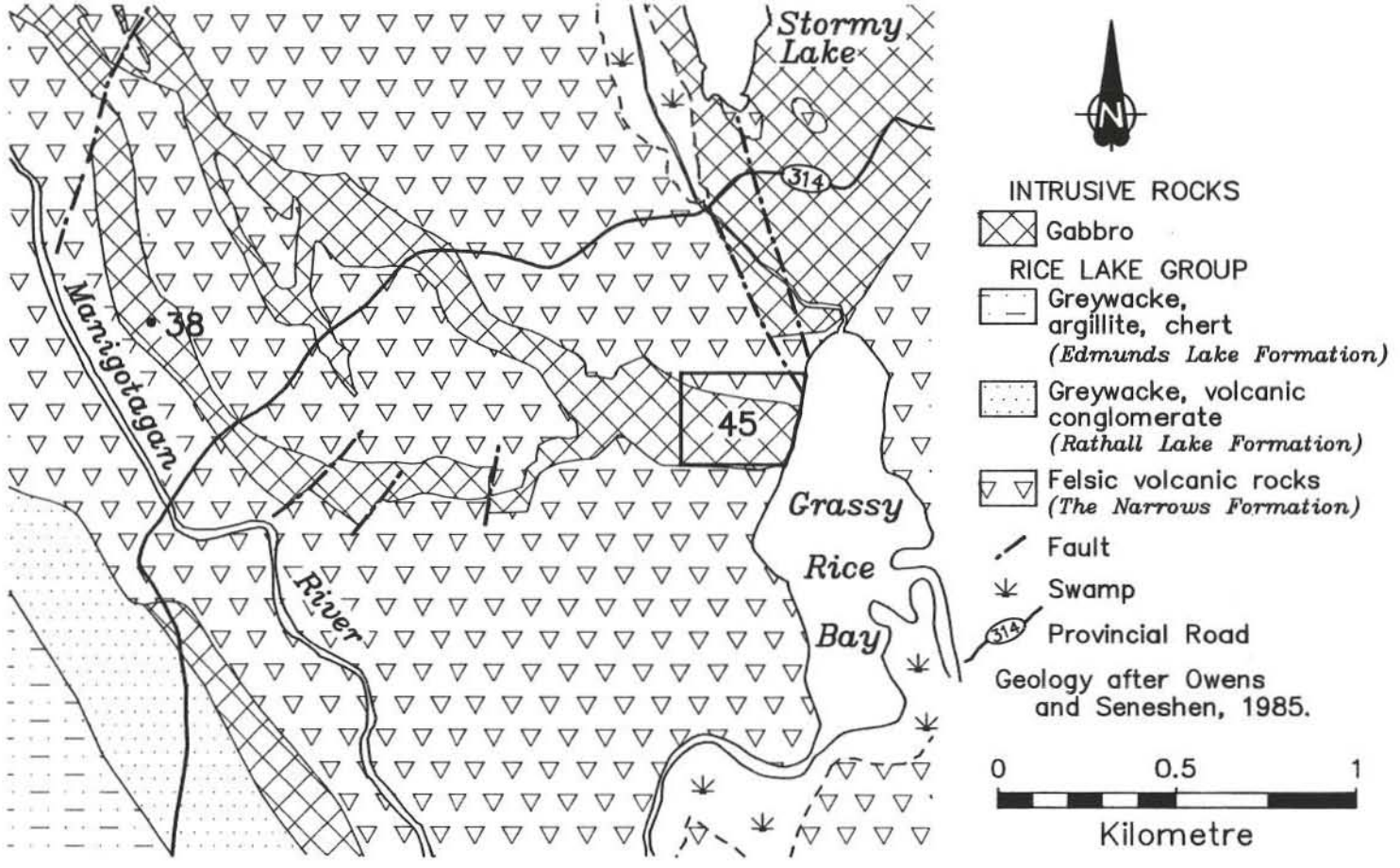


Figure 38-1: Geological setting of occurrences 38 and 45 (Tut).

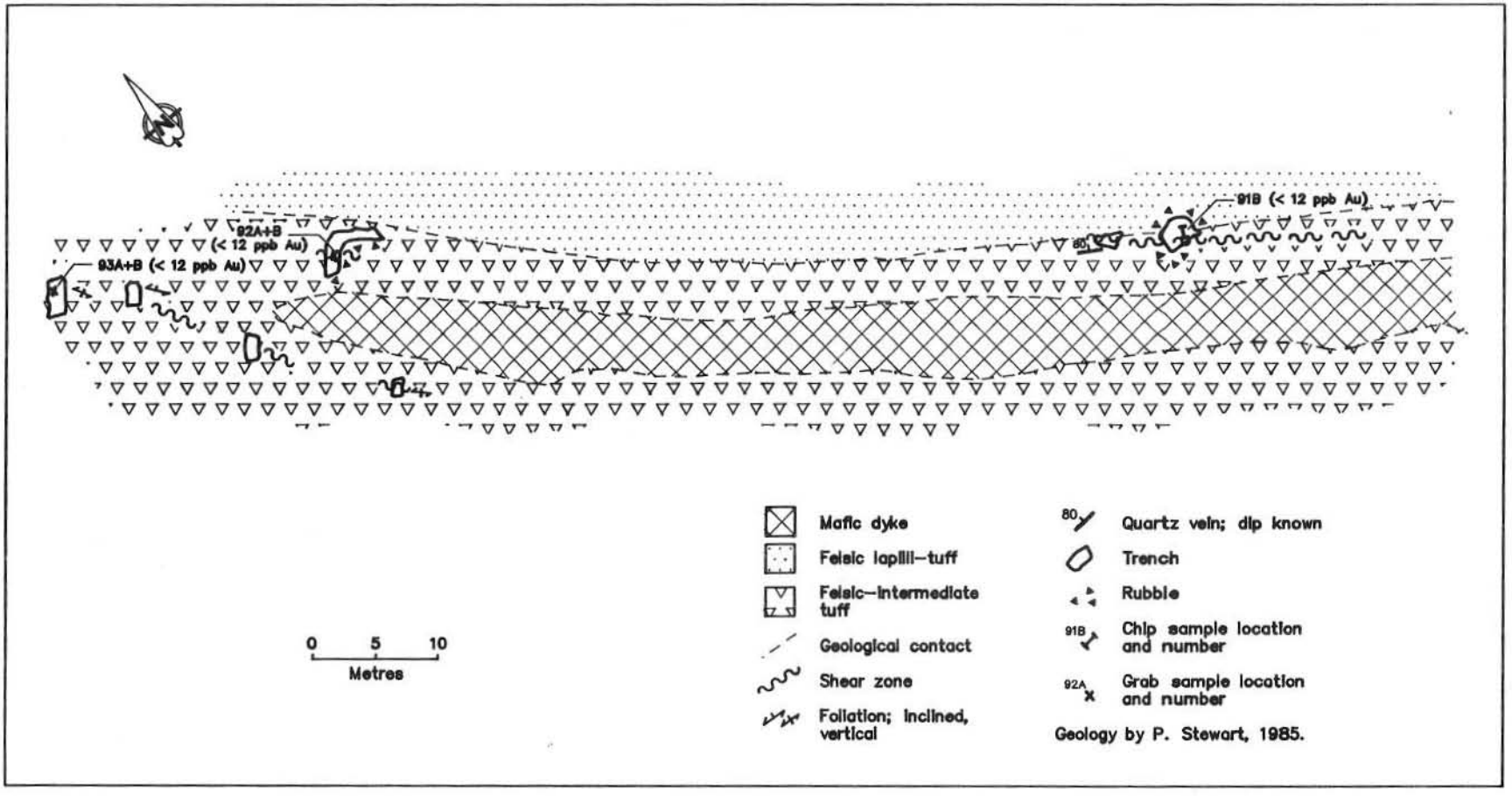
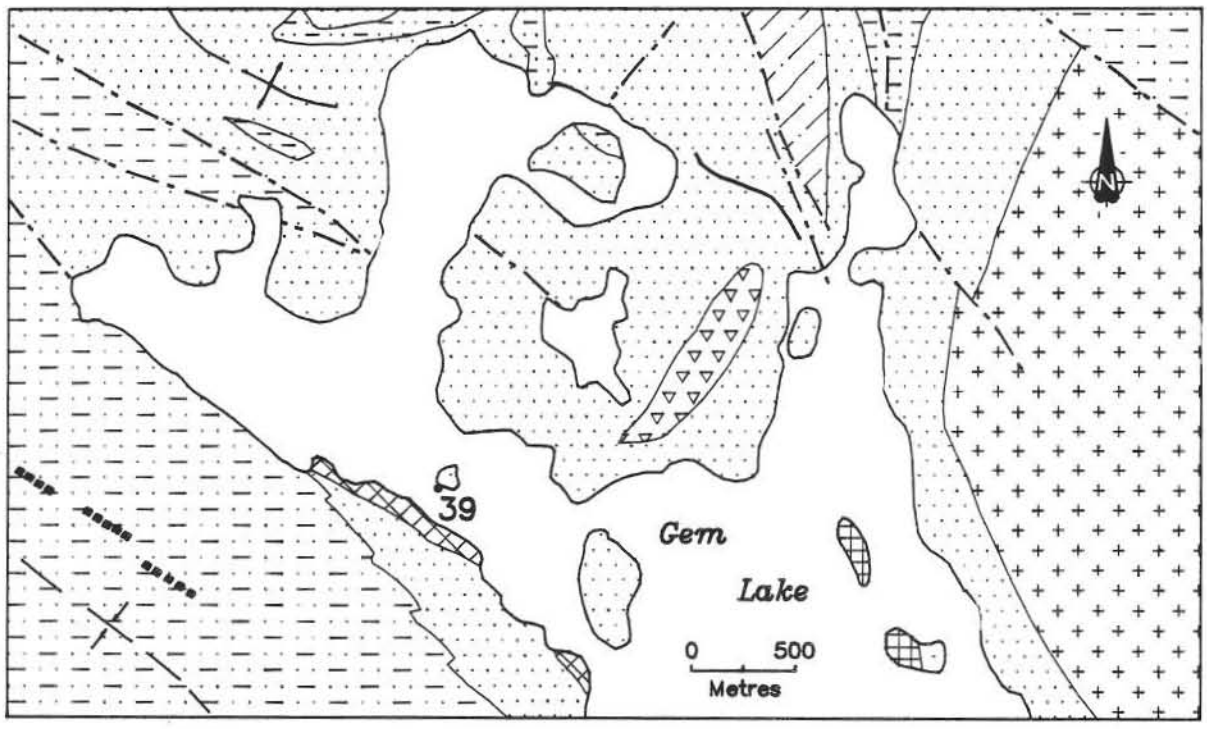


Figure 38-2: Detailed geology and sample locations at occurrence 38.



INTRUSIVE ROCKS

Granodiorite
(Wanipigow River Plutonic Complex)

Differentiated intrusive suite
(Manigotagan Gneiss Belt)

Gabbro

RICE LAKE GROUP/Gem Lake Subgroup

Felsite

Argillite, greywacke, polymictic conglomerate
(Edmunds Lake Formation)

Dacitic to rhyodacitic volcanic rocks
(Gem Lake Formation)

Basalt *(Gem Lake Formation)*

Iron formation

Fault

Syncline

Anticline

EM conductor (A.F. 91723)

Geology after Weber (1971b).

Figure 39-1: Geological setting of occurrence 39.

LOCATION: 39

NAME: GEM

UTM: 5626676N/343092E

ACCESS: Via boat. A landing at northwestern Gem Lake is accessible by a bush trail from Provincial Road 314 (Fig. 39-1). Motorized travel on this trail is possible only for high clearance all-terrain- or four-wheel-drive vehicles.

AREA: Gem Lake.

AIRPHOTO: A24709-107/A24670-31

EXPLORATION SUMMARY:

Cerro Mining Company conducted an airborne EM survey over the area in 1971, but did not locate any targets (A.F. 91687). Cominco Limited carried out an HLEM survey over part of northwestern Gem Lake in 1971, complemented by a geological mapping program in 1974, but did not delineate any encouraging targets (A.F. 91723). Riocanex Incorporated undertook HLEM and magnetometer surveys in 1981 over part of northwestern Gem Lake. The HLEM survey detected a weak anomaly that correlates with a topographic depression. It is hypothesized that this anomaly is caused by a fault oriented oblique to the stratigraphy (A.F. 92501). Noranda Mines Limited conducted trenching and sampling in 1986. Recent sample cuts and a 12 x 3.5 x 1.5 m trench were observed at the occurrence.

GEOLOGICAL SETTING:

The area is underlain by a sequence of Gem Lake Subgroup mafic to felsic volcanic and hypabyssal rocks and derived sedimentary units (Fig. 39-1). Location 39 is underlain by coarse- to fine-grained felsic lapilli tuff and feldspathic wacke of the Gem Lake Formation. A felsic volcanic centre has been postulated to occur 1.5 km southeast of the occurrence (Weber, 1971a). The rocks are ubiquitously foliated into an irregular curviplanar attitude. Discontinuous, sinuous quartz veins, 1-35 cm across, are concordant to slightly discordant to the foliation. The veins are massive with locally vuggy portions, milky white, and partly rust stained.

MINERALIZATION:

Pyrite, 1-3%, is disseminated in the wall rocks and the quartz veins. Up to 5% pyrite and subordinate chalcopyrite are concentrated adjacent to the quartz veins. The wall rocks are pervasively sericitized and contain Fe-carbonate. Russell (1952, Map #7, Sheet 50-3a) briefly described this occurrence as a carbonate zone containing quartz, carbonatized granite fragments and "a few grains of pyrite".

GEOCHEMICAL DATA:

Two rock samples were collected and analyzed for their Au content. Sample 51-6-B137, a grab sample of quartz vein with 2-3% pyrite, contained 1 ppb Au. Sample 51-6-B138, a 6 m chip sample of lapilli tuff with 1-2% pyrite, also contained 1 ppb Au. Sample locations are shown in Figure 39-2.

CLASSIFICATION:

Stratabound massive sulphide type deposit; volcanic rock associated. Minor pyrite and chalcopyrite disseminated in sericitized felsic tuffaceous rocks are considered to be part of a zone of alteration, however a solid sulphide lens has not been identified to date. Minor quartz veins accompany the altered rocks.

REFERENCES:

Assessment Files 91687,91723, 92501
Manitoba Energy and Mines, Minerals Division.

Russell, G.A.
1952: Geology of the Lily Lake-Kickley Lake area, Rice Lake Mining Division, southeastern Manitoba; Manitoba Mines and Natural Resources, Mines Branch, Publication 50-3, 17 p.

Weber, W.
1971a: Geology of the Long Lake-Gem Lake area; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 63-106.

Weber, W.
1971b: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

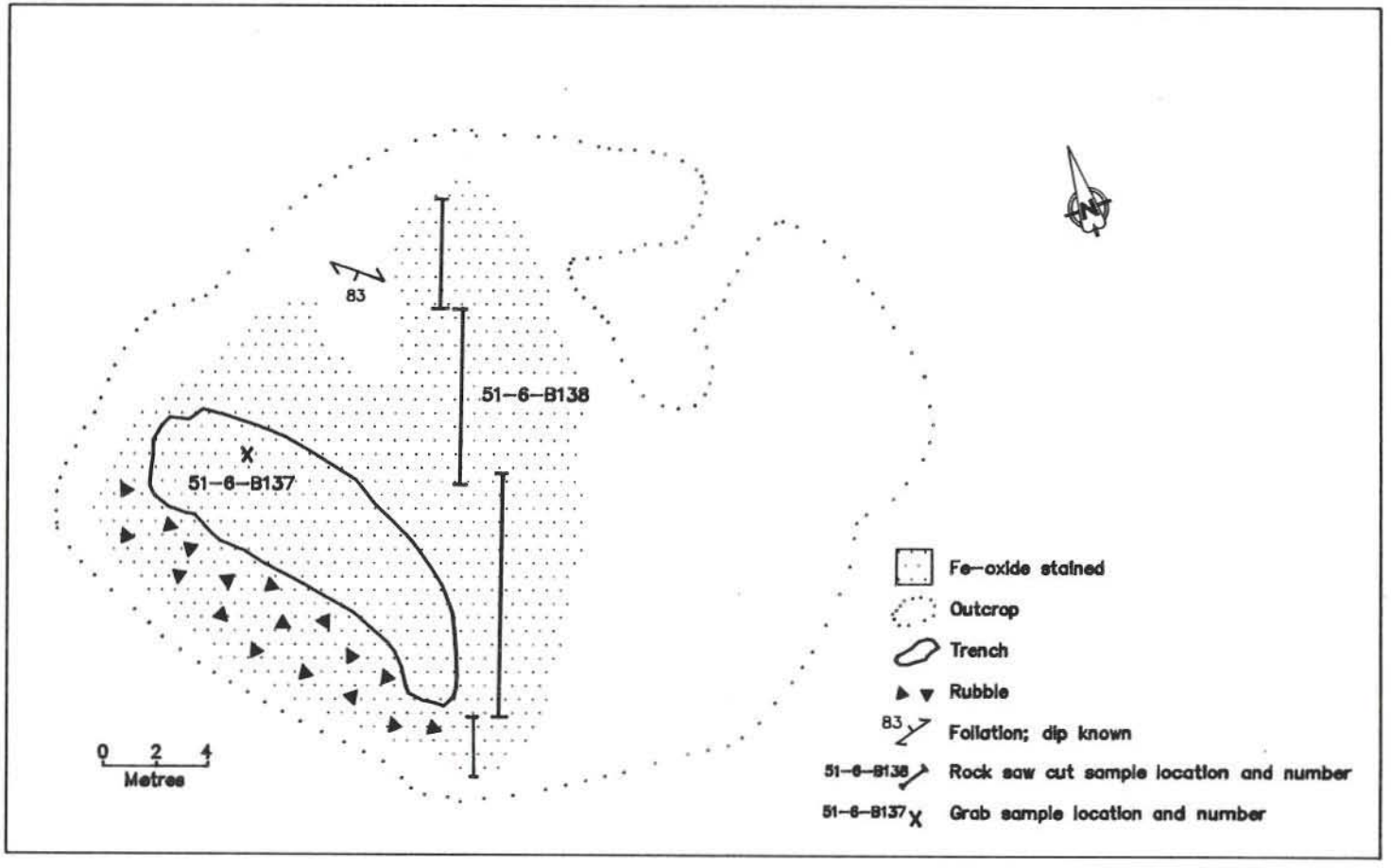


Figure 39-2: Detailed geology at occurrence 39.

LOCATION: 40

NAME: (A.F. - Mineralization intersected by diamond drilling)

AREA: Siderock Lake.

UTM: 5651942N/343479E

AIRPHOTO: A24709-91

ACCESS: Via boat on Wallace Lake, the Wanipigow River and Siderock Lake.

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited, in joint venture with Granges Exploration Aktiebolag, carried out airborne EM and ground HLEM surveys, followed by diamond drilling of six holes for a total of 497 m from 1972 to 1975 in the Siderock Lake area (A.F. 91722). Salvaged remnants of drill core from DDH H-7, H-12, H-13 (NTS 52M/3) and several unlabelled boxes of core from this project are stored at Manitoba Energy and Mines core storage facility in Winnipeg.

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation sedimentary rocks, including banded magnetite-chert iron formation, argillite, mudstone and pillowed volcanic rocks (Fig. 40-1). These rocks are flanked to the south by Gunnar Formation mafic pillowed flows and chlorite schist and to the north by Wanipigow River Plutonic Complex quartz diorite; felsic volcanic-derived sedimentary rocks of The Narrows Formation are in fault contact to the southeast. Drill holes intersected a suite of mudstone, siltstone, quartzite, and banded iron formation, with minor intercalated layers of felsic and mafic volcanic rocks that are intruded locally by granite and granodiorite.

MINERALIZATION:

Locally, up to 60% pyrrhotite and lesser pyrite occur mainly as fracture fillings in sedimentary rocks. Oxide facies banded iron formation was intersected in two of the drill holes. Native gold flakes associated with silicate minerals were observed in a polished section of drill core from DDH H-7, which was drilled along the strike continuation of location 40, but located in map area NTS 52M/3.

The following highlights are excerpted from drill logs (A.F. 91722):

1) DDH H-10 (75.5 m). Siltstone interbedded with quartzite and iron formation. Up to 10% pyrrhotite ribbons within the quartzite.
2) DDH H-11 (133.5 m). Interbedded quartzite and siltstone hosting two 10-15 m thick layers of banded iron formation. Up to 30% pyrrhotite occurs in quartzite and iron formation.
3) DDH H-12 (84.4 m). Quartzite interbedded with siltstone contains up to 20% pyrrhotite, mainly as coarse grained fracture fillings.
4) DDH H-13 (105.7 m). Siltstone interbedded with quartzite and two layers of banded iron formation. Quartzite contains 10-15 cm thick layers with up to 60% pyrrhotite.
5) DDH H-14 (50 m). Siltstone interbedded with quartzite containing minor amounts of graphite and up to 10% pyrite and pyrrhotite mainly in fracture zones.
6) DDH H-15 (47.8 m). Layered suite of mafic and felsic volcanic rocks intruded by granite dykes. Felsic volcanic rocks contain up to 20% pyrite fracture fillings.
7) DDH H-16 (87.8 m). Silicate facies iron formation interlayered with chlorite schist and felsic and mafic tuff. Trace pyrite in quartz veins of undetermined thickness and up to 10% pyrite and pyrrhotite in mafic tuff.

GEOCHEMICAL DATA:

Gold assays of drill core reported by Manitoba Mineral Resources Limited (A.F. 91722) are low, ranging from nil to trace Au; the highest analysis came from one 0.6 m long sample containing 0.11% Cu.

Gold concentrations in samples of the salvaged drill core are listed in Table 40-1. (Note that only core from drill holes collared in NTS 52L/14 are discussed here; core from drill holes collared in NTS 52M/3 are described in Mineral Deposit Series Report #15). In addition, eight sulphide-bearing banded iron formation samples from unidentifiable core boxes selected from Manitoba Mineral Resources Limited core cache were analyzed for Au. Concentrations in these samples were <12 ppb Au (the analytical lower limit of detection), except for one sample containing 29 ppb Au.

Forty-eight grab samples of magnetite-chert banded iron formation from exposures north of the Wanipigow River between Wallace and Siderock lakes have been analyzed for Au: all 39 samples contained <3 ppb Au.

In summary, analyzed drill core and rock samples of oxide iron formation in the vicinity of Wallace Lake and Siderock Lake do not indicate the existence of significant Au concentrations in these rocks.

CLASSIFICATION:

Chemical sediment type deposit; oxide facies iron formation. Sulphide±graphite mineralization occurs in quartzite and siltstone in association with magnetite-chert iron formation.

The conjunction of a suite of sedimentary rocks that include abundant sulphide minerals and graphite and mafic intrusive rocks (metagabbro) in the area north

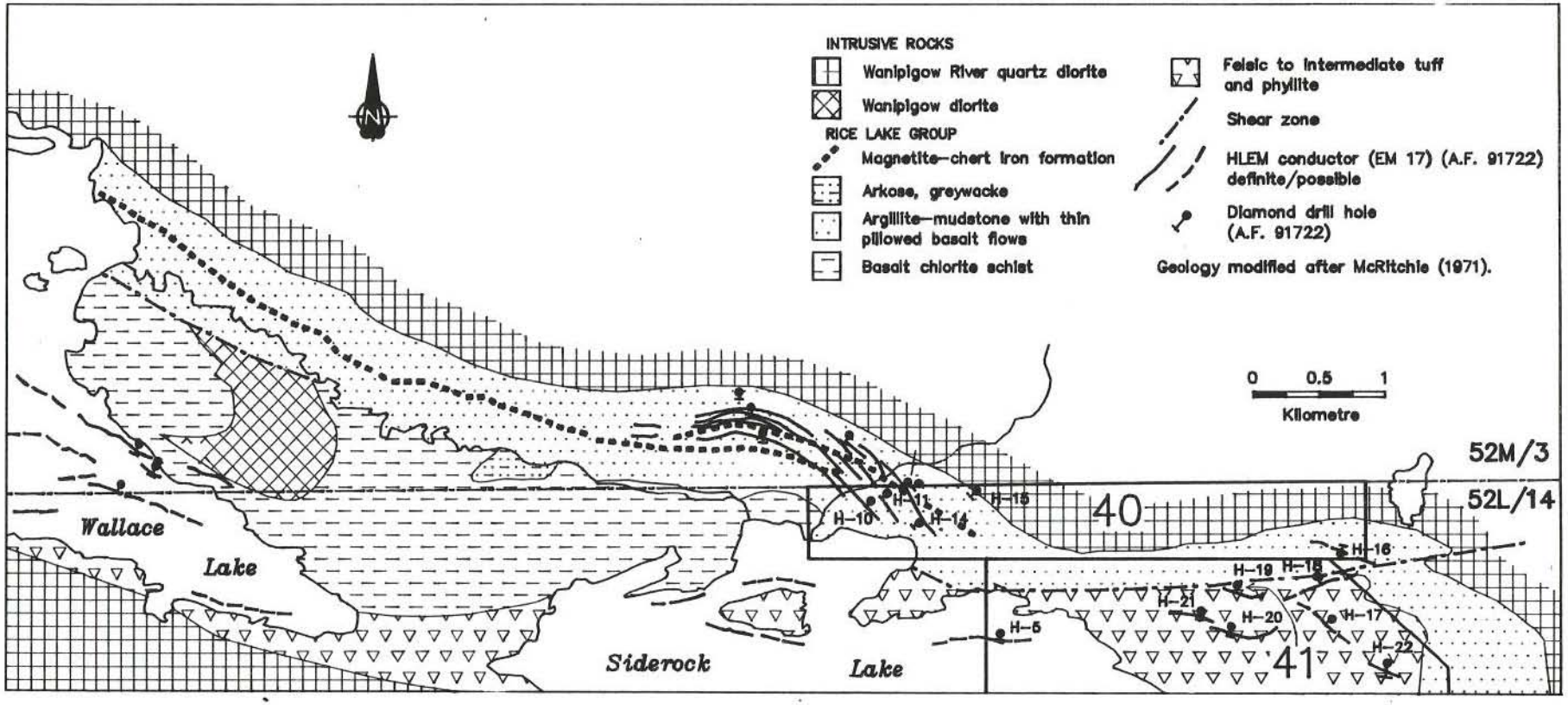


Figure 40-1: Geological setting of occurrences 40 (Siderock) and 41.

of the Wanipigow River between Wallace and Siderock lakes presents an intriguing exploration possibility for platinum group elements. Graphite occurs in many stratabound platinum group element deposits and in discordant pipes hosting platinum group element in the Bushveld complex, and may thus be a useful empirical guide to platinum group element mineralization.

Table 40-1: Au analyses for salvaged drill core samples from location 40

Sample No.	Length (m)	Rock type	Au (ppb)
DDH H-12			
WL 85-178	1	banded iron formation	<12
WL 85-179	1	banded iron formation	<12
WL 85-180	1	banded iron formation	23
WL 85-181	1	banded iron formation	<12
WL 85-182	1	banded iron formation	<12
WL 85-183	1	banded iron formation	17
WL 85-184	1	banded iron formation	12
WL 85-185	0.5	banded iron formation	17
WL 85-186	1	banded iron formation	<12
WL 85-187	1	banded iron formation	<12
WL 85-188	1	banded iron formation	<12
WL 85-189	1	banded iron formation	<12
WL 85-190	1	banded iron formation	17
WL 85-191	1	banded iron formation	<12
WL 85-192	1	banded iron formation	<12
WL 85-193	0.5	banded iron formation	<12
DDH H-13			
WL 194	1	banded iron formation	<12
WL 195	1	banded iron formation	<12
WL 196	1	banded iron formation	<12
WL 197	1	banded iron formation	<12
WL 198	1	banded iron formation	<12
WL 199	1	banded iron formation	<12
WL 200	1	banded iron formation	<12
WL 201	0.5	banded iron formation	<12

REFERENCES:

Assessment File 91722
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **41**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5651131N/345349E

ACCESS: Via boat on Wallace Lake, the Wanipigow River and Siderock Lake.

AREA: East of Siderock Lake (Fig. 40-1).

AIRPHOTO: A24709-91

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited, in joint venture with Granges Exploration Aktiebolag, carried out airborne EM and ground HLEM surveys, and drilled eight holes totalling 527 m from 1972 to 1975 east of Siderock Lake (A.F. 91722).

GEOLOGICAL SETTING:

The area is underlain by The Narrows Formation felsic volcanic-derived sedimentary rock that are in fault contact to the north with Edmunds Lake Formation argillaceous and mafic volcanic rocks, that is flanked to the north by Wanipigow River Plutonic Complex quartz diorite (Fig. 40-1). Drill holes intersected a suite of felsic to mafic fragmental and flow rocks (A.F. 91722). Drill logs from DDH H-19 report "significant" amounts of graphite. DDH H-16 intersected sulphide facies iron formation interlayered with chlorite schist and felsic to mafic tuff.

MINERALIZATION:

The following highlights were excerpted from drill logs (A.F. 91722):

1) DDH H-5 (61.5 m). Thin bedded rhyolitic tuff containing local fragments with up to 5% pyrrhotite and pyrite blebs and stringers.
2) DDH H-16 (87.8 m). Felsic to mafic tuff with up to 10% pyrrhotite and interlayered iron formations.
3) DDH H-17 (54.2 m). Mafic to intermediate tuff with narrow (<50 cm) intersections containing up to 10% pyrite.
4) DDH H-18 (51.5 m). Mafic flows and tuff; minor amounts of pyrrhotite and pyrite in blebs and stringers.
5) DDH H-19 (66.7 m). A suite of felsic volcanic rocks contains a near solid graphite layer approximately 1 m thick within "a highly sheared and fractured [zone] with core angles 0-90°; possibly a fault zone". Pyrite and pyrrhotite, 2-15%, are present between 20 and 53 m. A layer with 75% pyrite and 5% pyrrhotite was intersected between 45.9 and 46.3 m. Approximately 14 m of barren mafic volcanic rocks overlie the felsic rocks.
6) DDH H-20 (65.2 m). Felsic tuff with concentrations of 2-8% pyrrhotite and 1-5% pyrite blebs and stringers between 26.5 and 29.3 m.
7) DDH H-21 (49.7 m). Tuff with approximately 10% disseminated and stringer pyrrhotite between 22 and 23.5 m, followed by a 3 m near solid (up to 70%) pyrrhotite layer, decreasing to 5-40% pyrrhotite between 26.5 and 29.3 m.
8) DDH H-22 (90.5 m). Mafic to intermediate tuff with 2-10% pyrrhotite and 2-8% pyrite between 50.9 and 68.8 m.

GEOCHEMICAL DATA:

Gold analyses of drill core reported by Manitoba Mineral Resources Limited are listed in Table 41-1; concentrations are generally low, ranging from nil to 600 ppb Au. The highest Zn analyses were 0.69% and 1.07% Zn over 50 cm and 60 cm respectively (A.F. 91722).

Table 41-1: Au contents in drill core samples from location 41 (A.F. 91722).

DDH	Sample location (m)	Au (ppb)	Zn (%)
H-16	62.5-64.0	tr.	
	70.3-71.6	nil	
H-18	33.5-35.0	tr.	
	35.0-36.5	tr.	
H-19	20.4-21.9	nil	
	21.9-23.5	tr.	
	23.5-24.8	300	
	25.7-27.8	600	
	29.6-30.0	600	
	34.0-34.6	tr.	
	34.6-37.9	tr.	0.69
	37.9-39.6	300	
	39.6-41.1	tr.	
	41.1-42.7	tr.	
	42.7-44.8	300	
	44.8-45.4	300	
	45.4-46.0	tr.	1.07
	46.0-46.3	tr.	
	46.3-48.1	tr.	
	48.6-50.0	nil	
	50.5-50.8	tr.	
	51.4-52.7	tr.	
H-20	49.6-51.2	nil	
	51.2-52.7	tr.	
52.9-53.5	tr.		
H-22	50.9-51.8	tr.	
	52.4-53.5	tr.	
	67.1-68.9	tr.	

CLASSIFICATION:

Chemical sediment type deposit. A suite of felsic to mafic volcanic rocks contains layers of sulphide facies iron formation, minor sulphide mineralization and a graphite-bearing shear zone.

REFERENCES:

Assessment File 91722

Manitoba Energy and Mines, Minerals Division.

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

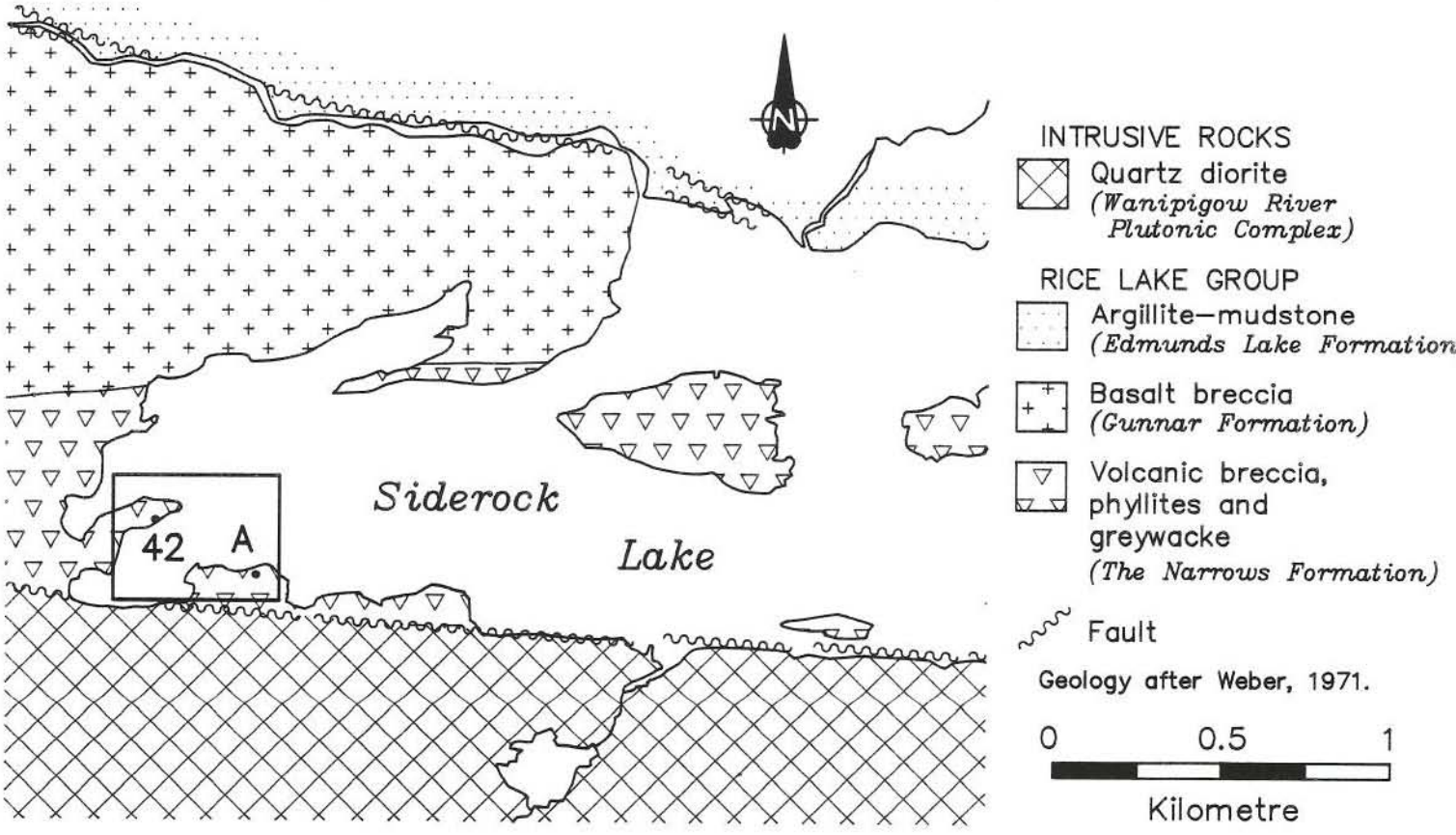


Figure 42-1: Geological setting of occurrence 42 (Siderock/Burgland).

LOCATION: 42

NAME:

UTM: 5650824N/340028E

ACCESS: Via boat on Wallace Lake, the Wanipigow River and Siderock Lake.

AREA: Southern shore of Siderock Lake.

AIRPHOTO: A24709-224

EXPLORATION SUMMARY:

There are no known published records of work done on this occurrence. Three shallow rubble-covered pits were located during a field visit in 1985. In addition, several small blasted pits were located near the southern shore of Siderock Lake at Zone A (Fig. 42-1).

GEOLOGICAL SETTING:

The area is underlain by The Narrows Formation felsic to intermediate tuff and wacke, flanked to the north by Gunnar Formation basalt breccia and is in fault contact to the south with Wanipigow River Plutonic Complex quartz diorite (Fig. 42-1). A pink to black, northwest-striking, mylonitic quartz vein, which is approximately 1 m thick and traceable for approximately 15 m along strike, transects felsic to intermediate tuff and wacke. A graphic feldspar-quartz intergrowth occurs in several locations within the vein. Zone A is hosted by felsic tuff and wacke.

MINERALIZATION:

A mylonitized quartz vein hosts trace inhomogeneously distributed pyrite crystals. Sheared slaty felsic rocks adjacent to the quartz vein are stained with Fe-oxide. At Zone A, minor pyrite is disseminated in felsic tuff and wacke.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Vein type deposit. A quartz vein with minor pyrite mineralization occurs in felsic tuff and wacke.

REFERENCES:

Weber, W.

1971: Geology of the Wanipigow River-Manigotagan River region; In Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

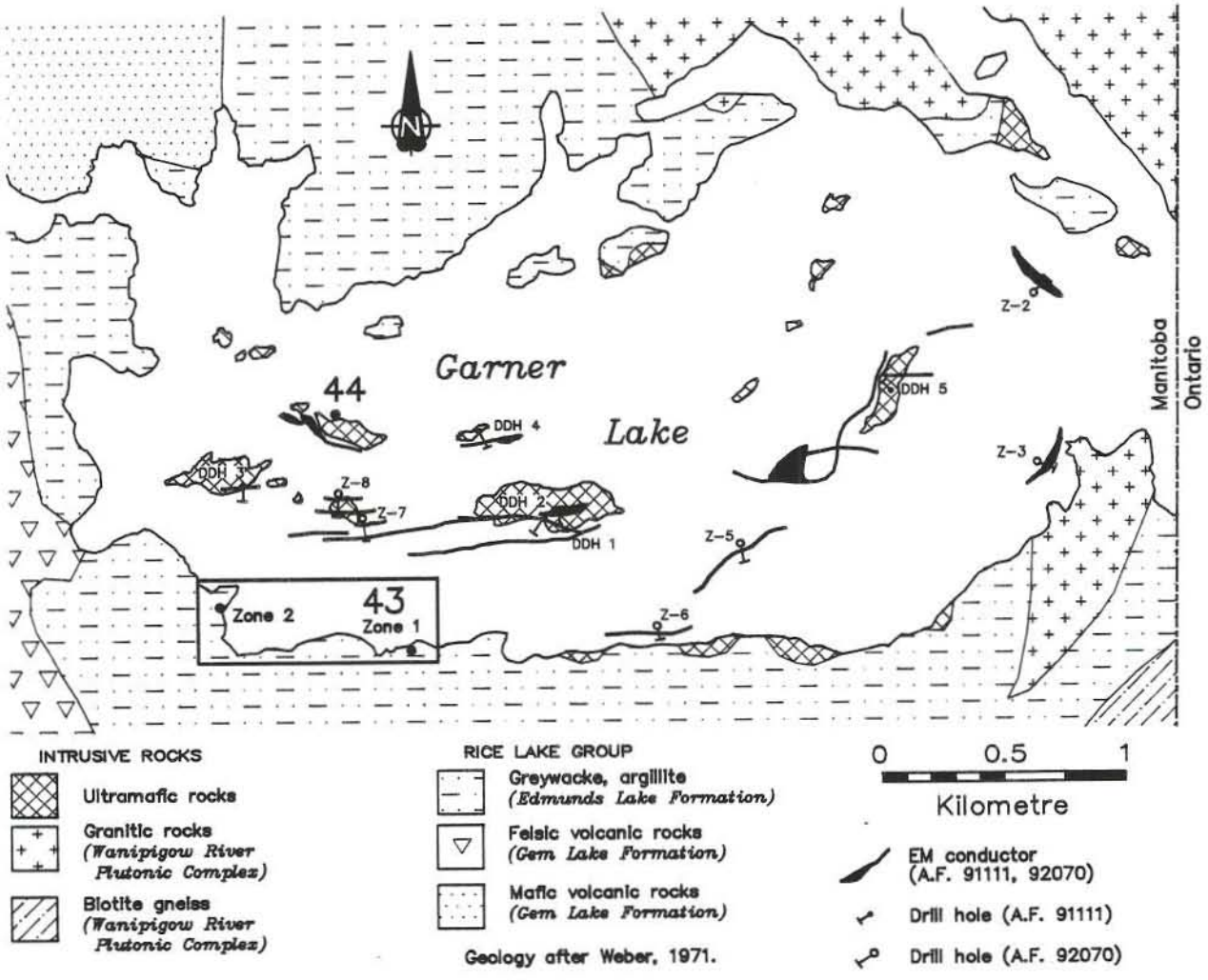


Figure 43-1: Geological setting of occurrence 43.

LOCATION: **43**

NAME: GARNER

UTM: Zone 1. 5630512N/345281E
Zone 2. 5630680N/344640E

ACCESS: Via boat from Beresford Lake via Garner River.

AREA: South shore of Garner Lake.

AIRPHOTO: A285055-105

EXPLORATION SUMMARY:

Wright (1932) noted the presence of prospects pits and surface stripping at the occurrence. Stockwell (1945) recorded the occurrence (Map 811A). Newmont Mining Corporation conducted a VLFEM survey over the area in 1959 (A.F. 91111). Eleven trenches were located on Zone 1 in 1986. Some of the quartz veins were sampled with a portable rock saw by Esso Resources Canada Limited (W. Conley, pers. comm., 1986). Zone 2 consists of two trenches (5x2x2.5 m; 2x2x2 m); exploration details are not known for Zone 2.

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation sedimentary rocks that are flanked to the west by Gem Lake Formation felsic and mafic volcanic rocks and to the east by Wanipigow River Plutonic Complex granite and biotite gneiss of the (Fig. 43-1).

Zone 1. Wright (1932) describes two quartz-filled shear zones at this location; the first is 84 m long and up to 1.8 m wide, and the second, 30 m to the north, is 61 m long and averages 0.75 m. The second, west-striking shear hosts multiple quartz veinlets and masses and transects grey to beige, fine grained, silicified greywacke (Fig. 43-2). The white to smoky quartz veins are mostly continuous, several centimetre-thick (maximum 1 m) and oriented parallel to subparallel to foliation.

Zone 2. Quartz veins, 10-30 cm thick, are hosted by sheared greywacke. Zone 2 may represent the westward extension of Zone 1.

MINERALIZATION:

Zone 1. Wright (1932) reports that smoky quartz from Zone 1 carries "free gold and sulphides". Pyrite, 1-3%, occurs on fracture planes within the shear zone or in vuggy quartz. Rocks near the shear zone are foliated and altered by quartz, sericite and chlorite. Quartz veins are grey to white, with yellow to red rusty weathered spots and slightly porous zones.

Zone 2. Quartz veins at Zone 2 are devoid of sulphide minerals.

GEOCHEMICAL DATA:

Russell (1952) mentioned that samples of the quartz-bearing shear zone "returned positive gold values".

A grab sample (52-6-B34) of grey-white quartz with trace pyrite from Zone 1 contained 61 g/t Au. No samples were taken from Zone 2.

CLASSIFICATION:

Vein type deposit; multiple quartz veins. Two shear zones with quartz veins contain minor pyrite and gold.

REFERENCES:

Assessment File 91111
Manitoba Energy and Mines, Minerals Division.

Russell, G.A.
1952: Geology of the Lily Lake-Kickley Lake area, Rice Lake Mining Division, southeastern Manitoba; Manitoba Mines and Natural Resources, Mines Branch, Publication 50-3, 17 p.

Stockwell, C.H.
1945: Gem Lake, Manitoba; Geological Survey of Canada, Geological Map 811A, 1:63 360.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

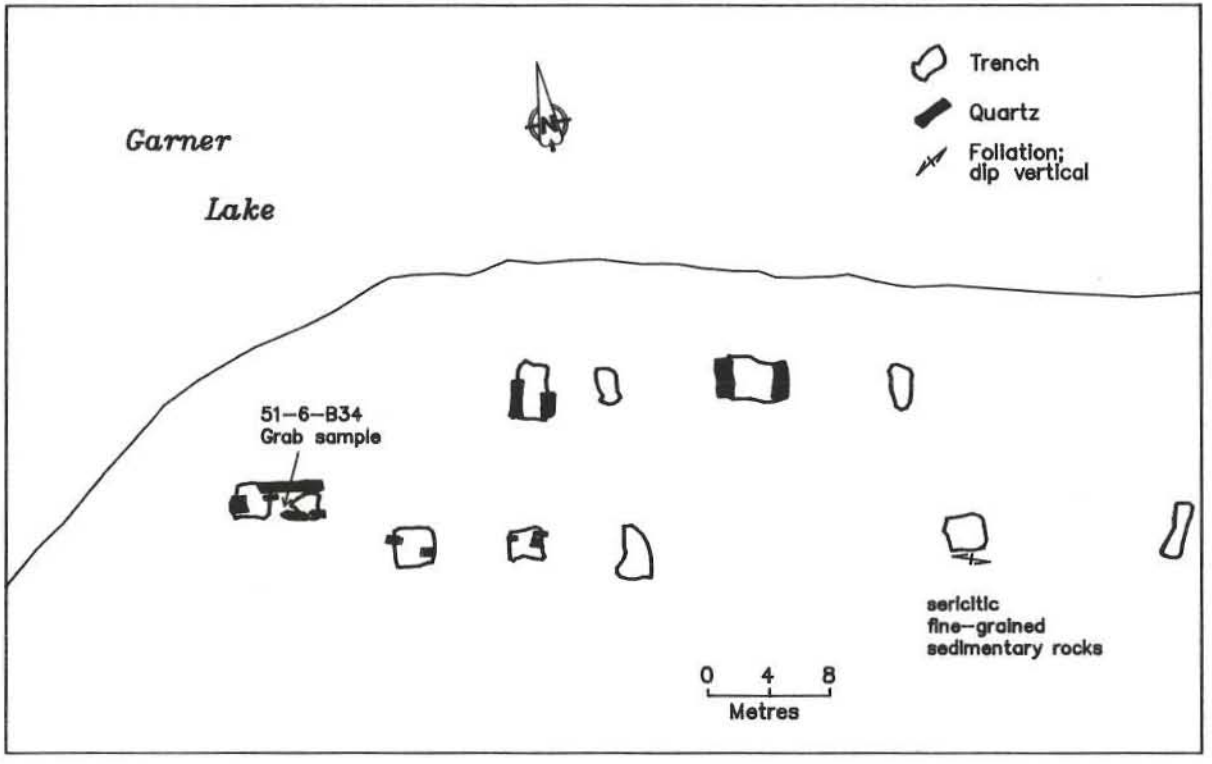


Figure 43-2: Detailed geology at occurrence 43, Zone 1.

LOCATION: 44

NAME: (A.F. - Mineralization intersected by drilling)

AREA: Garner Lake.

UTM: 5631480N/345042E

AIRPHOTO: A24670-36/A24709-103

ACCESS: Via boat from Beresford Lake via the Garner River.

EXPLORATION SUMMARY:

In 1959 Newmont Mining Corporation carried out magnetometer and VLFEM surveys over the Garner Lake ultramafic body and part of the surrounding rocks (A.F. 91111). This survey was followed up by five drill holes totalling 484 m (A.F. 91111). In 1973 Manitoba Mineral Resources Limited drilled six holes with a total length of 628 m to test targets identified by an HLEM survey (A.F. 92070). A small shallow pit is present on the north shore of one of the western islands.

GEOLOGICAL SETTING:

Garner Lake is underlain by a weakly differentiated intrusion with compositions ranging from peridotite to pyroxenite and minor, spatially restricted pegmatitic gabbro (Fig. 43-1). The mafic rocks underlying most of Garner Lake are described by Wright (1932), Stockwell (1945), Russell (1952) and Scoates (1971). Scoates (1971) constructed a tentative approximately 1270 m thick stratigraphic column distinguishing six layers of peridotite and pyroxenite. The ultramafic body discordantly intruded folded Edmunds Lake Formation sedimentary rocks. Diamond drill holes intersected locally magnetiferous, serpentinized peridotite and pyroxenite (A.F. 91111, 92070).

MINERALIZATION:

Disseminated pyrrhotite, 1-2%, and chalcopyrite, <1%, are hosted by pyroxenite on islands in western Garner Lake (Fig. 44-1). "Pyrite cubes associated with calcite" were observed in drill core from DDH Z-7 (A.F. 92070). Drill core described in A.F. 91111 did not contain sulphide mineralization.

CLASSIFICATION:

Magmatogenic type deposit associated with mafic/ultramafic rocks. Minor pyrite and chalcopyrite are disseminated in pyroxenite within a weakly differentiated ultramafic intrusion.

REFERENCES:

Assessment Files 91111, 92070
Manitoba Energy and Mines, Minerals Division.

Russell, G.A.
1952: Structural studies of the Long Lake-Halfway Lake area, Rice Lake Mining Division; Manitoba Mines and Natural Resources, Mines Branch, Publication 496, 10p.

Scoates, R.F.J.
1971: Ultramafic rocks of the Rice Lake greenstone belt; in Geology and geophysics of the Rice Lake region, southeastern Manitoba (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, p. 189-202.

Stockwell, C.H.
1945: Gem Lake, Manitoba; Geological Survey of Canada, Map 811A, 1:63 360.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

Wright, J.F.
1932: Geology and mineral deposits of a part of southeastern Manitoba; Geological Survey of Canada, Memoir 169, 150p.

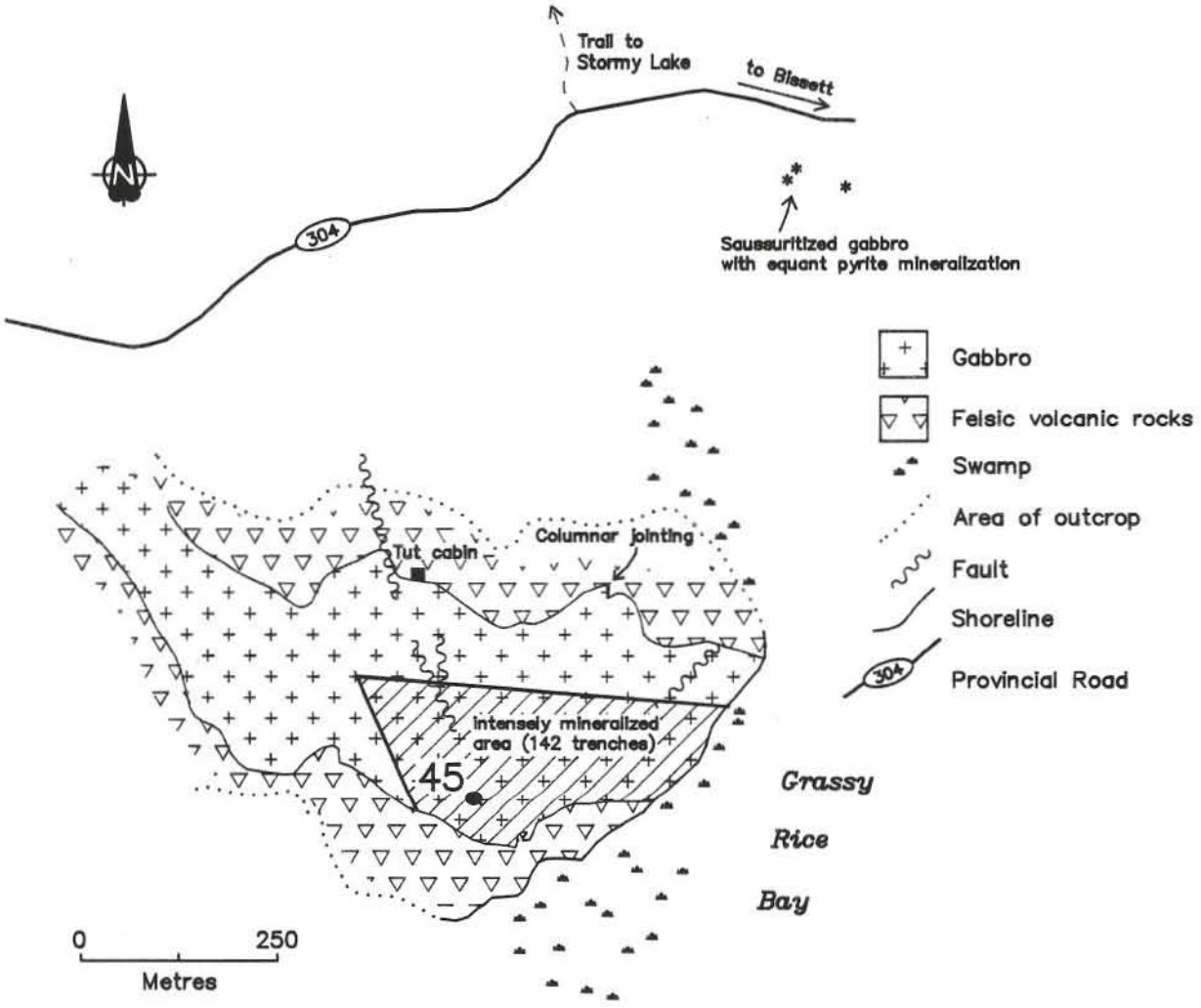


Figure 45-1: Geological sketch map of occurrence 45 (Tut).

LOCATION: **45**

NAME: TUT

UTM: 5633778N/338841E

ACCESS: Traverse approximately 500 m east of Provincial Road 314 from a point 1.4 km north of the culverts in the Manigotagan River.

AREA: West of Garner Lake (Fig. 38-1).

AIRPHOTO: A24709-235

EXPLORATION SUMMARY:

This mineral occurrence is named after the late George Buchanan, alias "King Tut", who prospected this area and held the mineral rights to the Tut claims in the 1930's. The only known written reference to this mineral occurrence is a note stating that a rock sample of "diorite" (gabbro) mineralized with arsenopyrite assayed approximately 17.1 g/t Au (J.H. Morgan, 1940, Gunnar Mines Corporation File).

GEOLOGICAL SETTING:

The area has been mapped by Stockwell (1945), Weber (1971) and Seneshen and Owens (1985) (Fig. 38-1). Theyer and Gaba (1986) undertook a detailed investigation including 1:500 geological mapping and sampling of 142 trenches (Fig. 45-1, 45-2). The area is underlain by a gabbroic sill that is part of a regionally extensive sequence of mafic rocks that intruded the supracrustal rocks of the southeastern Rice Lake greenstone belt. Regional mapping indicates that these sills were emplaced prior to the deformation of the belt (Seneshen and Owens, 1985). The sill intrudes a suite of felsic fragmental volcanic rocks of The Narrows Formation, including lapilli tuff and heterolithic volcanic tuff breccia (Seneshen and Owens, 1985).

The host rock is a heterogeneous assemblage of intrusive rocks ranging from melagabbro to gabbro, leucogabbro and anorthosite. Most of the rocks are coarse to fine grained, equigranular, dark grey to black. Gabbro with equant plagioclase megacrysts up to 3 cm and orbicular gabbro with rounded feldspar crystal agglomerations up to 10 cm in diameter appear to be concentrated predominantly along the edges of the sill. Mineral graded layers, generally 10-20 cm (up to 1 m) thick, are common in the central parts of the sill. The stratigraphic top of this unit is probably toward the south, indicated by a consistent southward grading of melagabbro layers into leucogabbro.

The gabbro underlying the area of the Tut occurrence is strongly fractured along northeast- and northwest-striking regional fracture systems. Large parts of the gabbroic rocks are also intensely jointed into irregularly shaped polygonal fragments. Quartz and ankerite occur in faults, joints, lenses and pods.

MINERALIZATION:

Pyrite wisps and laminae are concentrated in and adjacent to quartz veins, but also occur in the gabbro. Arsenopyrite occurs most commonly at the margins of and adjacent to quartz veins. Minor arsenopyrite is also present in highly kaolinized portions of the gabbro, several metres distant from mineralized fractures. Pyrrhotite occurs in a few trenches within the central portion of the gabbro. Chalcopyrite, sphalerite and galena are rare. Visible gold was found in two samples of quartz that also contained minor pyrite, arsenopyrite and magnetite. Magnetite occurs as millimetre-thick coatings on fracture planes or as an abundant (1-5%, near solid layers, in places up to 15 cm thick) primary mineral phase in parts of the gabbro. Magnetite also coexists with sulphide, carbonate and silicate minerals.

At the Tut occurrence the sill and felsic volcanic rocks adjacent to the gabbroic contact are altered to an assemblage of silicate, sulphide, oxide and carbonate minerals. The gabbro is intensely altered, especially near fractures and joints. Epidotization, chloritization and saussuritization are widespread and locally reduce the gabbro to a hard, green, very fine grained mass of epidote, zoisite and chlorite. Alteration of feldspar, chloritization of hornblende and sulphidization have altered the gabbro to a whitish soft mass that weathers to an ochre-red soil.

GEOCHEMICAL DATA:

The results of Au analyses on rock samples from this occurrence are listed in Table 45-1. Numerous samples contained anomalous Au concentrations up to >10 g/tonne Au. The samples were also analyzed for Pt and Pd with negative results; most concentrations were below the analytical limit of detection.

Locations of some samples are shown in Figure 45-2. A 1:500 map showing sample locations is available from the senior author upon request.

CLASSIFICATION:

Vein type deposit; multiple veins and lenses.

This group of mineralized quartz veins and pods in a 250 x 300 m fractured and altered zone within a gabbroic sill is an attractive Au exploration target. An array of trenches and pits expose quartz-filled fractures mineralized with pyrite, pyrrhotite, arsenopyrite and substantial Au concentrations. The interest of this target is compounded by its easy accessibility (0.5 km east of Provincial Road 314), and by the lack of an in depth investigation of its mineral potential as an open pit operation.

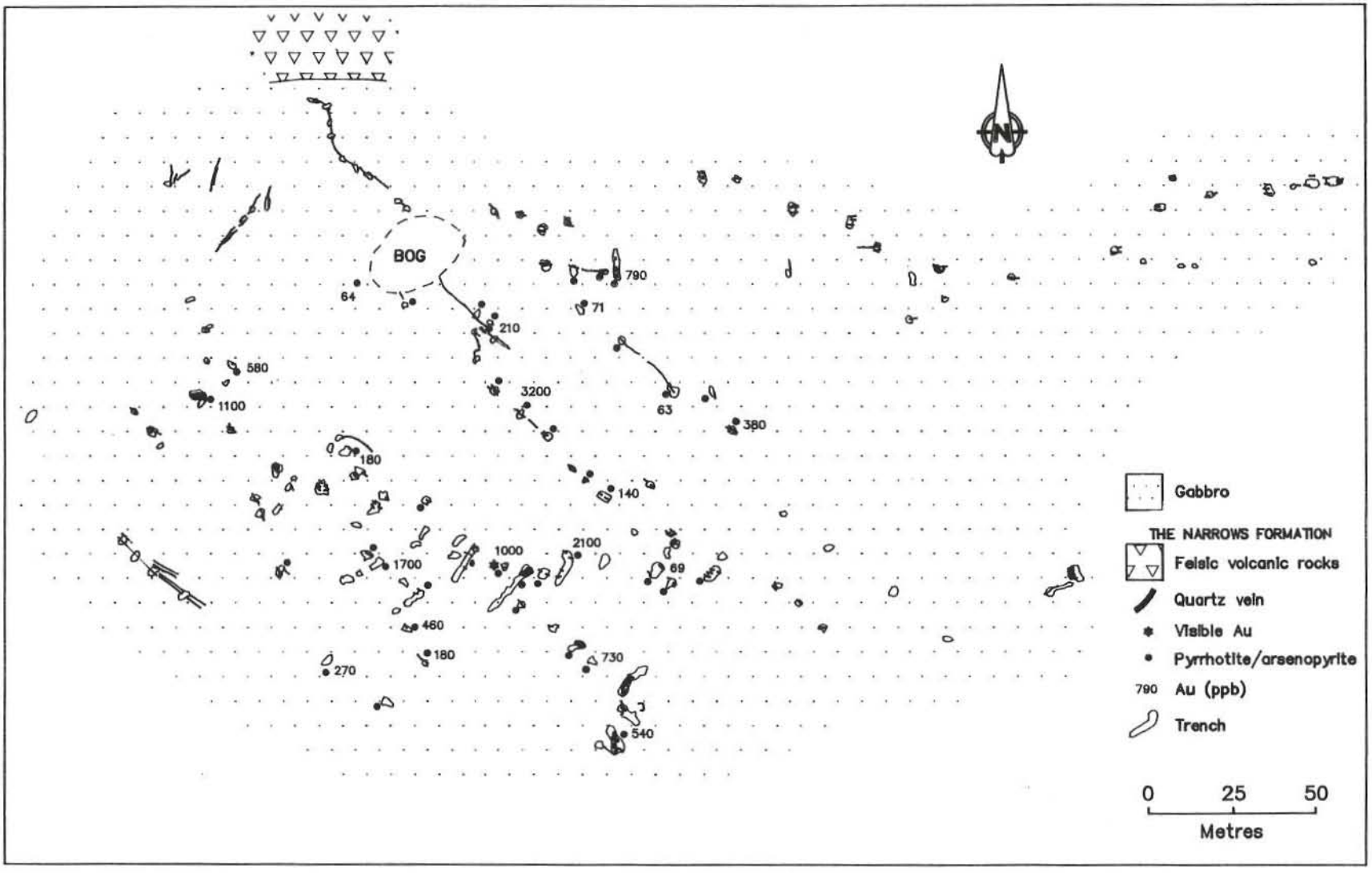


Figure 45-2: Detailed geology and trench locations at occurrence 45.

Table 45-1: Au analyses in samples from the Tut occurrence (location 45)

Sample No.	Rock Type	Mineralization	Au (ppb)
6-163	quartz vein	<1% py	38
6-164	sericite, quartz	10-15% py+apy	790
6-165	gabbro, sericite schist	7% py, 3% apy	71
6-166	gabbro, quartz veins	5% py, 17% apy	210
6-167	quartz	2% py, 8% apy	37
6-168	quartz vein	8% py, 15% apy	3200
6-169	quartz-sericite schist	3% py+apy	23
6-170	gabbro	10% py, 10% apy	140
6-171	gabbro, quartz	20% py, 15% apy	69
6-172	quartz vein	10% py, 10% apy	540
6-173	quartz vein	30% py, 5% apy	730
6-174	quartz vein	10% py, 10% apy	2100
6-175	quartz vein	visible Au, 3% py, 3% apy	>10000
6-176	quartz vein	3% py, 3% apy	180
6-177	quartz vein	8% py, 5% apy	460
6-178	quartz vein	8% py, 5% apy	1700
6-179	sericite schist	4% py, 3% apy	180
6-180	quartz, carbonate	15% py, 3% apy	68
6-181	gabbro	1% py	51
6-182	gabbro	nonmineralized	5
6-186	sericitized gabbro	10% py,15% apy	580
6-187	altered gabbro	2% py, 10% coarse apy	1100
6-188	gabbro	8% py, 10% apy	380
6-189	gabbro	10% py, 10% apy	63
6-190	felsic volcanic	8% py, 5% apy	270
6-191	altered gabbro	5% py, 3% apy	<2
6-192	altered gabbro	2% py, 1% apy	<2
6-193	altered gabbro	2% py	<2

REFERENCES:

Gunnar Mines Corporation File
Manitoba Energy and Mines, Minerals Division.

Owens, D.J., and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Seneshen, D.M. and Owens, D.J.
1985: Geological investigations in the Stormy Lake area; **in** Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, p. 112-120.

Stockwell, C.H.
1945: Gem Lake, Manitoba; Geological Survey of Canada, Geological Map 811A, 1:63 360.

Theyer, P. and Gaba, R.
1986: Mineral deposit investigations in the Rice Lake greenstone belt; **in** Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1986, p. 120-124.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

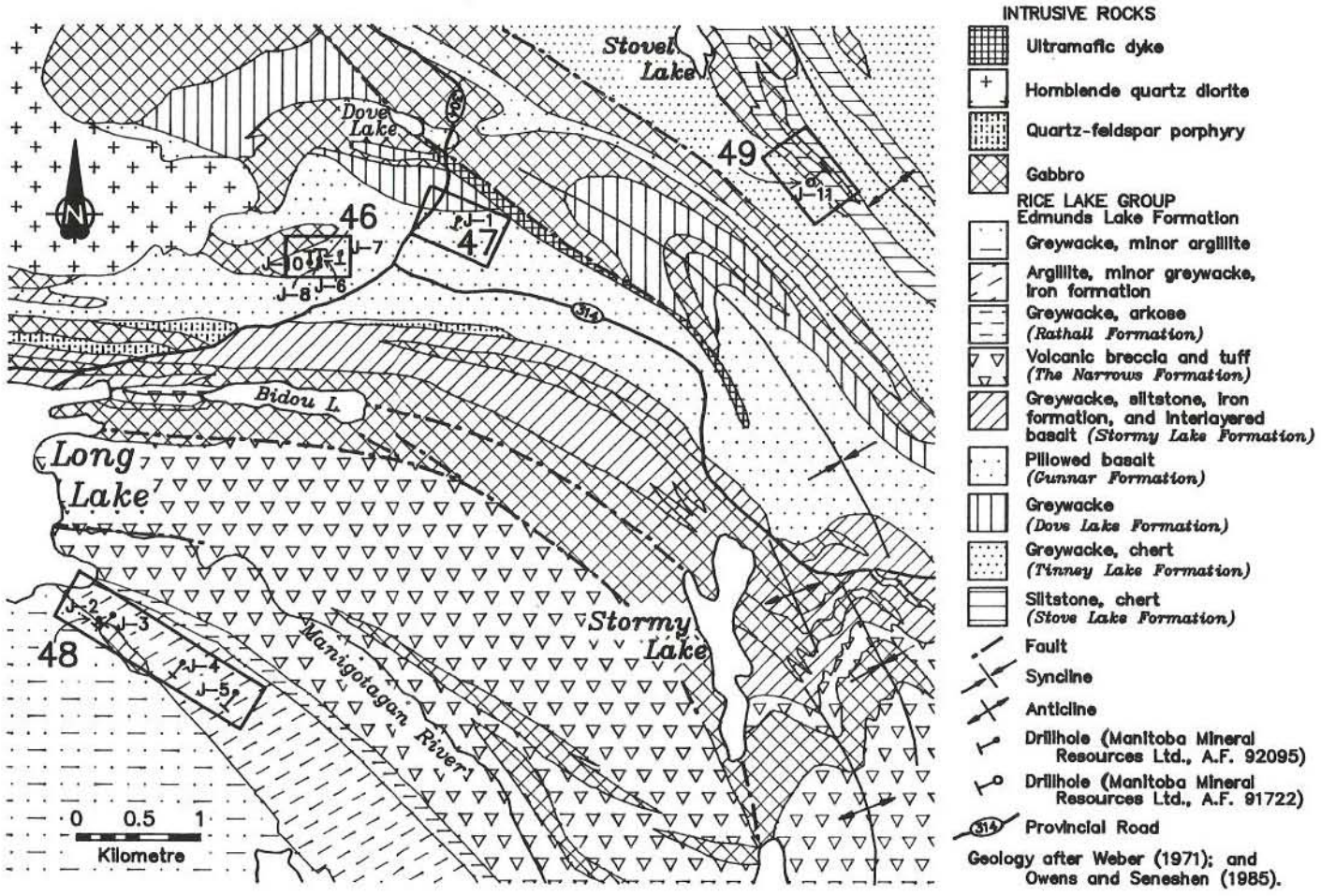


Figure 46-1: Geological setting of occurrences 46, 47, 48 and 49.

LOCATION: **46**

NAME: (A.F. - Mineralization intersected by diamond drilling) Man Min Grid JAY-3

UTM: 5639208N/335069E

ACCESS: Traverse approximately 200 m west from the intersection of Provincial Roads 304 and 314.

AREA: Approximately 900 m north of Bidou Lake.

AIRPHOTO: A24670-101

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out linecutting, a HLEM survey and drilled holes J-6, J-7, J-8 and J-10 totalling 318.5 m to test airborne geophysical conductors on Grid JAY-3 of the Jay claims in 1973 (A.F. 92095).

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation pillowed basalt flows that are intruded by gabbroic rocks (Fig. 46-1). Drill holes intersected mafic volcanic rocks; in addition, DDH J-7 intersected minor felsic volcanic rocks (A.F. 92095).

MINERALIZATION:

DDH J-6 intersected a shear zone in massive mafic volcanic rocks between 25.6 and 27.0 m that contained up to 60% quartz, 8% pyrrhotite, 3-7% pyrite, and trace to 3% chalcopyrite. The drill core contains 5% pyrrhotite blebs between 27 and 44.8 m.

DDH J-8 contains numerous sections up to 3.8 m long with up to 30% pyrrhotite, 5% pyrite, and 1% chalcopyrite in mafic volcanic rocks with narrow accessory carbonate veins; four of these sections are sheared.

DDH J-10 intersected a 4.3 m shear zone in mafic volcanic rocks with 20% quartz, 5% pyrite and trace chalcopyrite; additional narrow shear zones and quartz veins contain minor pyrite or pyrrhotite and trace chalcopyrite.

DDH J-7 contained a 0.3 m intersection with 3% finely disseminated pyrrhotite in mafic volcanic rocks.

GEOCHEMICAL DATA:

In DDH J-6, a 30 cm sample at 25.9 m contained 5.83 g/t Au and 1.22% Cu, and a 90 cm sample at 26.8 m contained 4.8 g/t Au and 0.35% Cu. Assays from DDH J-7, J-8 and J-10 contained nil to trace Au and trace to 0.05% Cu (A.F. 92095).

CLASSIFICATION:

Vein type deposit. A quartz vein with 3-8% Fe±Cu sulphide minerals occurs in a shear zone hosted by mafic volcanic rocks.

REFERENCES:

Assessment File 91722, 92095
Manitoba Energy and Mines, Minerals Division.

Owens, D.J., and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **47**

NAME: (A.F. - Mineralization intersected by diamond drilling) Man Min Grid JAY-4

UTM: 5639514N/336191E

ACCESS: Via Provincial Road 304.

AREA: Approximately 1.8 km northeast of Bidou Lake (Fig. 46-1).

AIRPHOTO: A24670-101

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out linecutting, a HLEM survey and drilled hole J-1 to a depth of 41.1 m to test an airborne geophysical conductor on Grid JAY-4 of the Jay claims in 1973 (A.F. 92095).

GEOLOGICAL SETTING:

The area is underlain by Gunnar Formation pillowed basalt flows and Dove Lake Formation greywacke (Fig. 46-1). Drilling intersected mafic volcanic rocks and a narrow feldspar porphyry dyke (A.F. 92095).

MINERALIZATION:

DDH J-1 intersected 3-5% pyrrhotite, up to 3% pyrite and trace chalcopyrite in massive mafic volcanic rocks between 18 and 25 m (A.F. 92095).

GEOCHEMICAL DATA:

A 15 cm sample at 17.6 m depth contained 0.3 g/t Au and 0.04% Cu; a 0.6 m intersection between 23.4 and 24 m contained trace Au and 0.02% Cu (A.F. 92095).

CLASSIFICATION:

Disseminated mineralization - not classified. Minor Fe±Cu sulphide minerals are hosted by mafic volcanic rocks.

REFERENCES:

Assessment File 91722, 92095
Manitoba Energy and Mines, Minerals Division.

Owens, D.J., and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **48**

NAME: (A.F. - Mineralization intersected by diamond drilling) Man Min Grid JAY 5

UTM: 5635645N/333815E

ACCESS: Via boat on Long Lake, or by vehicle approximately 4 km along an abandoned logging road starting from Provincial Road 314 less than 200 m south of the Manigotagan River culverts.

AREA: Southeast of Long Lake (Fig. 46-1).

AIRPHOTO: A24710-36

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out linecutting, a HLEM survey and drilled holes J-2, J-3, J-4 and J-5 totalling 221.6 m to test airborne geophysical conductors on Grid JAY-5 of the Jay claims in 1973 (A.F. 92095).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation greywacke and argillite flanked to the northeast by Rathall Formation greywacke and The Narrows Formation felsic volcanic rocks (Fig. 46-1). Drill holes intersected chloritized intermediate to mafic volcanic rocks (A.F. 92095).

MINERALIZATION:

DDH J-2 (39.3 m) contains a 20 cm intersection with 80% pyrite and 2% pyrrhotite. Disseminated arsenopyrite, 2%, is present from 33.1 m to 34.6 m.

DDH J-3 (67.6 m) intersected partially chloritized mafic to intermediate tuff, commonly with sections containing 1-10% pyrrhotite, up to 15% arsenopyrite, up to 5% magnetite, and traces of chalcopyrite and pyrite. A quartz vein approximately 1 m thick at 56 m contains 5% arsenopyrite and 3% pyrrhotite.

DDH J-4 (59.7 m) intersected partially chloritized mafic tuff; foliated and chloritized sections contain sulphide minerals. At approximately 18 m, a 20 cm intersection contains 15% pyrrhotite, trace arsenopyrite and 2% magnetite. Additionally, 5% pyrrhotite was noted at 46.5 m, and 10% pyrrhotite occurs at 49.7 and 56 m.

DDH J-5 (54.9 m) intersected mafic volcanic rocks with chloritized sections. Magnetite, 5 to 30%, occurred between 31.3 and 40.9 m. Pyrrhotite, 5-20%, and up to 5% arsenopyrite were intersected in sections up to 15 cm at approximately 33, 41 and 42 m depths (A.F. 92095).

GEOCHEMICAL DATA:

Table 48-1 lists results of geochemical analyses of core from location 48; anomalous results up to 1371 ppb Au were obtained (A.F. 92095).

Table 48-1: Au and Cu contents for drill core samples from location 48 (A.F. 92095)

DDH	Depth (m)	Sample length	Au	Cu (%)
J-2	18.2	25 cm	tr.	0.02
	34.6	1.5 m	1371 ppb	0.02
J-3	45.7	1.0 m	1371 ppb	tr.
	48.0	1.5 m	700 ppb	tr.
	49.5	1.5 m	tr.	tr.
	50.0	0.5 m	tr.	tr.
	56.8	1 m	tr.	tr.
	59.2	33 cm	tr.	tr.

J-4: Three samples were taken, but assay results were not recorded.

J-5: Two samples were taken; both contained tr. Au; one contained trace Cu and the other, 0.04% Cu.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. Moderate to near solid sections of pyrrhotite and arsenopyrite containing anomalous Au concentrations occur in mafic volcanic rocks.

The discontinuous EM conductors indicate that the sulphide minerals are probably hosted by mafic volcanic rocks within discontinuous fracture zones.

REFERENCES:

Assessment File 91722, 92095
Manitoba Energy and Mines, Minerals Division.

Owens, D.J., and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: 49

NAME: (A.F. - Mineralization intersected by diamond drilling)Man Min Grid JAY-14

UTM: 5639769N/339674E

ACCESS: Via boat to northern Beresford Lake, then traverse approximately 2.3 km west.

AREA: Between Stovel and Tinney lakes (Fig. 49-1).

AIRPHOTO: A24709-231

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out linecutting, a HLEM survey and drilled hole J-11 (57.9 m) to test an airborne geophysical conductor on Grid JAY-14 of the Jay claims in 1973 (Grid location recorded in A.F. 91722; part 2).

GEOLOGICAL SETTING:

The area is underlain by Tinney Lake Formation greywacke and chert, Stovel Lake Formation siltstone and chert, and gabbroic sills (Fig. 46-1). DDH J-11 intersected medium grained gabbro and narrow (1-5 cm) sections of siliceous sedimentary rocks (Manitoba Mineral Resources Limited staff; pers. comm. 1989).

MINERALIZATION:

15% pyrrhotite and trace pyrite in gabbro were intersected from 39.1 m to 42.4 m.

GEOCHEMICAL DATA:

Three core samples collected from DDH J-11 at 33 m, 39 m, and 41 m, contained traces of Au, Cu and Ni.

CLASSIFICATION:

Disseminated mineralization - not classified. Moderate to Fe-sulphide minerals are disseminated in gabbro.

REFERENCES:

Assessment File 91722
Manitoba Energy and Mines, Minerals Division.

Owens, D.J., and Seneshen, D.M.
1985: Stormy Lake (part of 52L/14); Manitoba Energy and Mines, Preliminary Geological Map 1985 R-1, 1:10 000.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **50**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5630081N/337313E

ACCESS: Via Provincial Road 314.

AREA: 3.5 km southwest of Grassy Rice Lake.

AIRPHOTO: A24709-238

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited conducted a HLEM survey and drilled nine holes totalling 706 m on CB 5109 in 1972-73 (A.F. 91763).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation sedimentary rocks. Sedimentary rocks of the Rathall Lake Formation, felsic volcanic rocks of the Gem Lake Formation, and mafic volcanic rocks and gabbroic sills occur to the east (Fig. 50-1). The sedimentary strata is oriented at 310°/70-85°N and comprises argillite, volcanic conglomerate, greywacke and minor iron formation. Drill holes intersected fine grained layered siltstone, lithic greywacke and fine grained greywacke. DDH B-3 also contained minor biotite-chlorite schist (A.F. 91763).

MINERALIZATION:

DDH B-1, B-3, B-4, B-5 and B-8 were drilled to test a single EM conductor (Fig. 50-1). DDH B-1 intersected a 0.7 m quartz vein containing siltstone inclusions with 30% chalcopyrite and pyrrhotite. In addition, siltstone contains traces of pyrite and pyrrhotite disseminated along fracture surfaces and in minor quartz veins. Pyrite, pyrrhotite and chalcopyrite, <1%, are disseminated in greywacke and lithic greywacke, with rare centimetre-sized areas of chalcopyrite. In DDH B-3, 0.76 m of biotite-chlorite schist with quartz-carbonate stringers contains 10% pyrrhotite and "some chalcopyrite". This intersection correlates with the major mineralized section in DDH B-1. DDH B-4 intersected 0.37 m of greywacke with 5-10% pyrrhotite and chalcopyrite, as well as local areas with trace to 1% chalcopyrite and/or pyrrhotite in siltstone and greywacke. DDH B-5 intersected two mineralized zones, a 0.7 m quartz vein hosted by biotitic siltstone with 10% chalcopyrite and accessory chlorite and biotite, and 0.3 m of greywacke with 5-10% chalcopyrite and pyrrhotite stringers. DDH B-8 intersected only minor Fe±Cu sulphide mineralization associated with quartz veinlets in siltstone (A.F. 91763).

DDH B-2, B-6 and B-9 tested the conductor immediately northwest of that described above. DDH B-6 intersected 2.5 m of biotitic siltstone with bands of near solid sulphide, <1-70 m thick, containing 50% pyrrhotite, 20% quartz and 1-3% chalcopyrite, as well as trace Fe±Cu sulphide minerals disseminated locally throughout the drill core. DDH B-9 intersected 0.76 m of siltstone with 15-20% pyrrhotite and minor chalcopyrite; in addition, there are numerous areas throughout the core with minor disseminated pyrrhotite and traces of chalcopyrite and arsenopyrite in siltstone with abundant fine quartz veinlets. DDH B-2 contains several quartz veins up to 0.40 m in core length with 15-40% pyrrhotite and chalcopyrite that are hosted by contorted siltstone. Less than 1% disseminated pyrrhotite and chalcopyrite are locally associated with quartz veinlets in siltstone (A.F. 91763).

DDH B-12 contained a 0.24 m intersection of 15% very fine grained pyrite and chalcopyrite associated with quartz veins in siltstone, and two other sections, <1 m, of quartz veins with 10% pyrrhotite and 1% chalcopyrite. Local areas within the siltstone and greywacke contain quartz veins with trace to minor amounts of pyrite (A.F. 91763).

GEOCHEMICAL DATA:

In DDH B1, the 0.7 m quartz vein with siltstone inclusions assayed 5.95% Cu, 0.05% Zn, and 2.1 g/t Au, and a separate 0.20 m intersection contained 3.24% Cu and trace Au in greywacke (A.F. 91763). In addition, DDH B4 contained 0.37 m of greywacke with 0.60% Cu and nil Au, and DDH B-5 intersected 0.27 m of greywacke grading 1.08% Cu and trace Au. Numerous other assays with Cu concentrations less than 0.50% and nil to trace Au are listed in drill logs, but are not enumerated here.

CLASSIFICATION:

Vein type deposit; multiple quartz veins. Minor to moderate Fe-sulphide minerals and chalcopyrite are associated with quartz veins in siltstone and greywacke.

REFERENCES:

Assessment File 91763
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

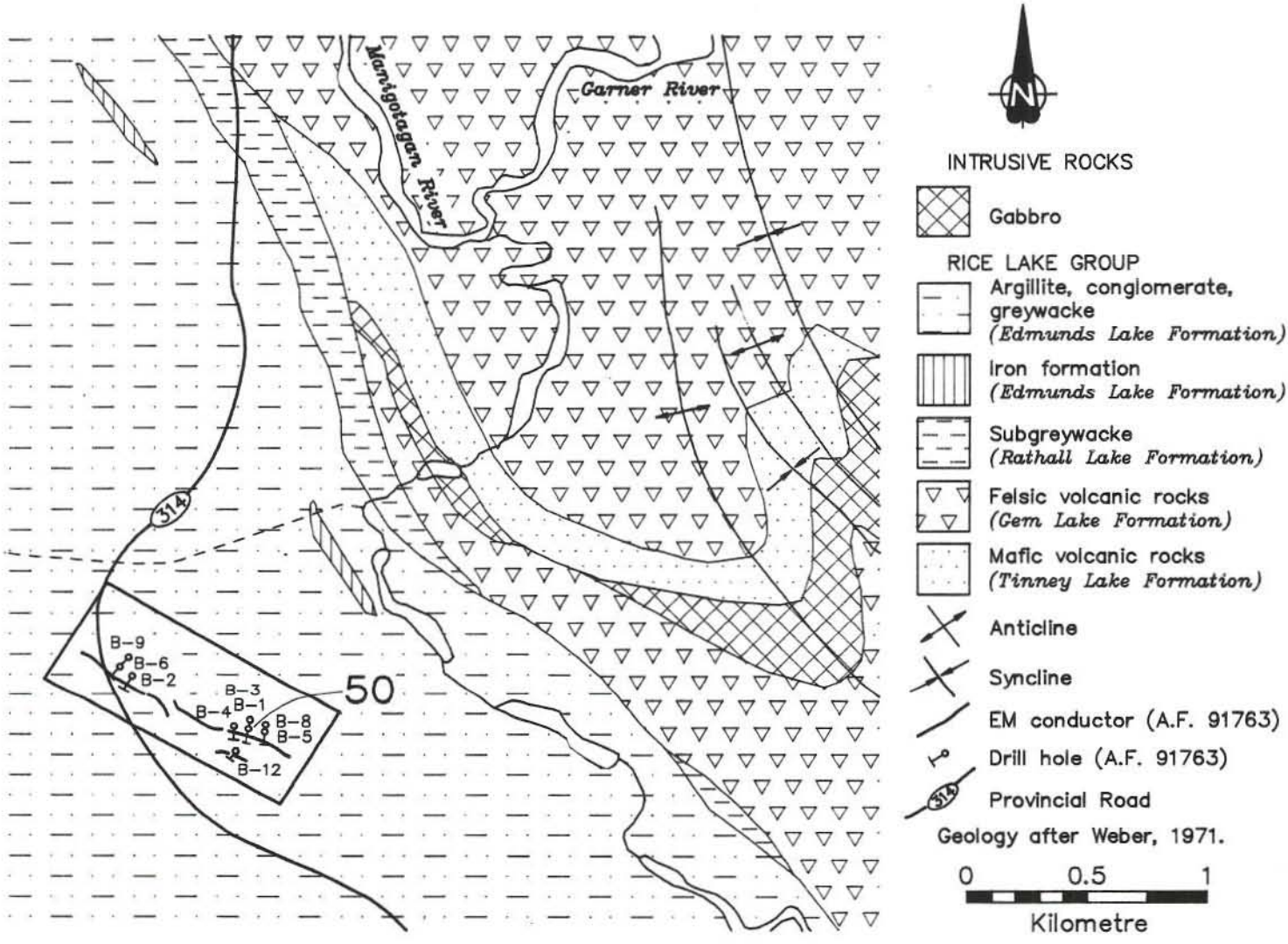


*Figure 50-1: **Geological setting and drill hole locations at occurrence 50.***

LOCATION: **51**

NAME: Owen's trenches

UTM: 5635745N/339599E

ACCESS: Via vehicle approximately 500 m south of the intersection of the Beresford Lake access road with Provincial Road 314 to a clearing on the western side of the road. Location 51 is approximately 250 m west of this point.

AREA: East of Stormy Lake.

AIRPHOTO: A24709-234

EXPLORATION SUMMARY:

Twenty-five trenches were recorded in an area measuring approximately 300 x 400 m by during the course of a detailed (1:1000) stratigraphic mapping program (Owens 1986). No other published records dealing with this occurrence are known.

GEOLOGICAL SETTING:

The area is underlain by volcanic and sedimentary rocks of the upper Stormy Lake Formation. Tuff, coarse tuff breccia, tuffaceous sandstone and siltstone, and associated layered fine grained sedimentary rocks contain at least four 0.5-20 cm thick layers of banded magnetite-chert iron formation (Fig. 51-1). Massive and pillowed basalt occur as a 5-40 m thick unit in the southern part of the area. Gabbro and leucogabbro sills are mostly conformable with the bedding in the sedimentary rocks and constitute approximately 50% of the mapped area. A stock of feldspar-quartz porphyry is present in the northeastern portion of the area.

MINERALIZATION:

Disseminated pyrite, 1-3%, occurs within felsic volcanic and fine grained argillaceous rocks in association with iron formation. Pyrite, 0.5-4%, is ubiquitous in the gabbro. Many trenches were sunk in fractured zones of gabbro that are characterized by quartz and ankerite lenses and contain up to fist-sized aggregates of very coarse crystalline pyrite.

GEOCHEMICAL DATA:

Sample 103 is a grab sample collected from a trench that exposes several quartz-ankerite lenses hosted by gabbro mineralized with approximately 3% coarse crystalline pyrite; the sample contained 560 ppb Au, <10 ppb Pt and <2 ppb Pd. Sample 104 is a grab sample of felsic fragmental rock with 1-2% pyrite from a trench. it contained <2 ppb Au, <10 ppb Pt and <2 ppb Pd. Sample locations are shown in Figure 51-1.

CLASSIFICATION:

Vein type deposit; multiple veins or lenses. Quartz-ankerite veins and lenses occur in gabbro hosting minor auriferous pyrite. In addition, chemical sediment type deposit; oxide facies iron formation. Minor pyrite is hosted by felsic volcanic and argillaceous rocks in association with iron formation.

REFERENCES:

Owens, D.J.
1986: Stratigraphy and structure of the Upper Stormy Lake Formation, Rice Lake greenstone belt; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1986, p. 115-119.

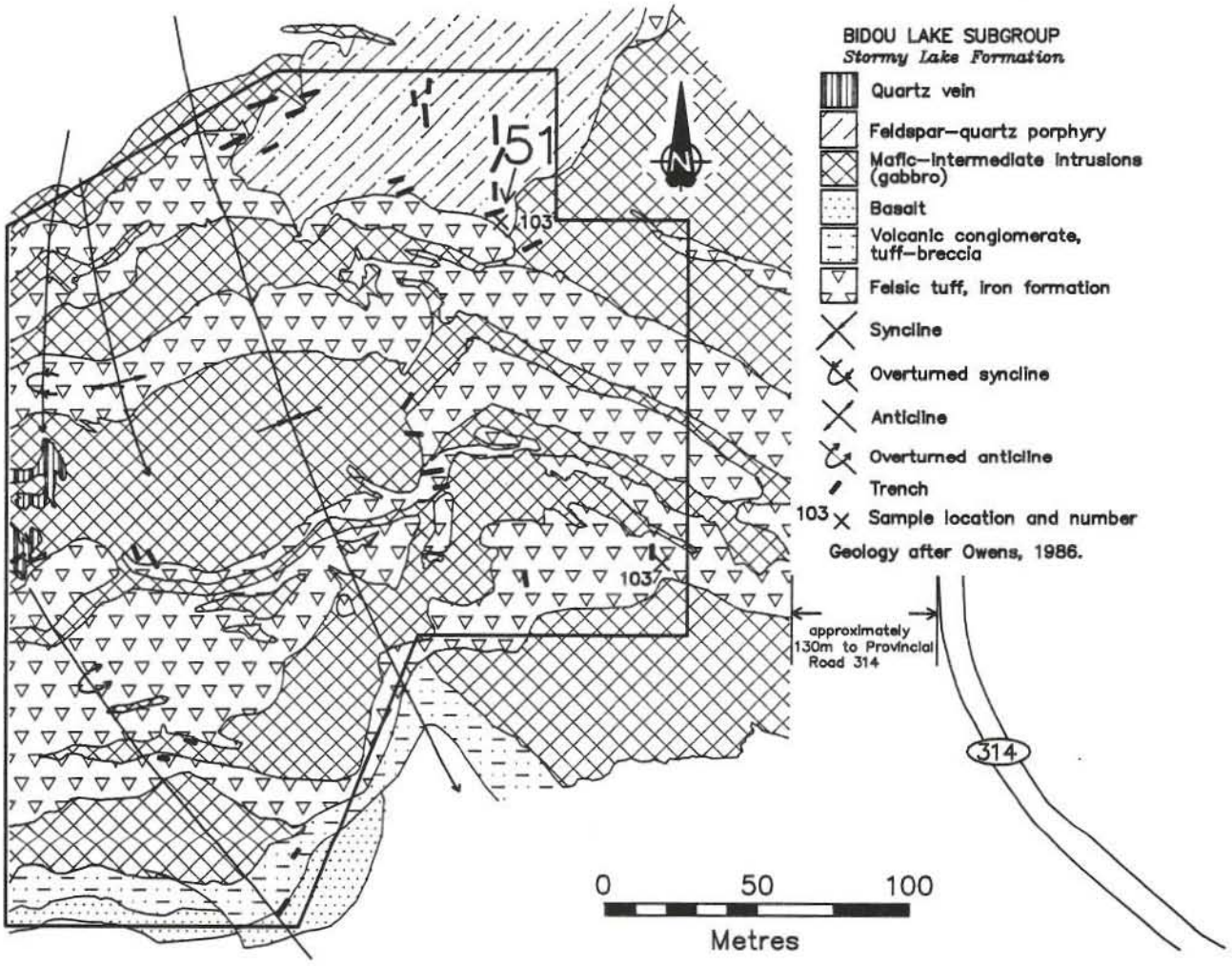


*Figure 51-1: **Geological setting and drill hole location at occurrence 51.***

LOCATION: **52**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5638701N/335921E

ACCESS: Via Provincial Road 314 and traverse.

AREA: Northeast of Bidou Lake.

AIRPHOTO: A24670-101

EXPLORATION SUMMARY:

In 1981 Great Basins Petroleum Limited, in joint venture with Ocelot Industries Limited and Klon Exploration Company Limited, conducted EM and magnetometer surveys, a limited amount of 1:3000 geological mapping and drilled three holes totalling 239 m to test EM conductors on part of a property that includes CB 12751, CB 12752, CB 12753 and CB 12756 (A.F. 92591).

GEOLOGICAL SETTING:

The area is underlain by a sequence of Rice Lake Group felsic and mafic volcanic rocks and immature sedimentary rocks that have been intruded by gabbroic sills and an ultramafic dyke (Fig. 52-1); strata have been folded and faulted. Drill holes intersected mafic volcanic rocks with quartz-feldspar porphyry dykes (A.F. 92591). In addition, DDH 81-3 contained greywacke and banded siltstone.

MINERALIZATION:

DDH 81-1 intersected 0.7 m containing 10% pyrrhotite and "possibly some pentlandite" in basalt with abundant quartz-carbonate veinlets. A 1.1 m fault intersection further downhole is brecciated, partly chloritized, and contains minor pyrrhotite, trace pentlandite, and abundant quartz veins. DDH 81-2 contained a 19.0 m long zone of chloritized mafic volcanic rocks with up to 2% pyrrhotite and abundant quartz-carbonate veinlets. Drill core from DDH 81-3 contains only minor local pyrrhotite associated with abundant quartz±carbonate veinlets and increased foliation in the sedimentary and mafic volcanic rocks (A.F. 92591).

GEOCHEMICAL DATA:

Drill core samples contained nil or trace Au (A.F. 92591).

CLASSIFICATION:

Vein type deposit; Multiple quartz±carbonate veinlets with minor pyrrhotite occur in mafic volcanic rocks and greywacke.

REFERENCES:

Assessment File 92591
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

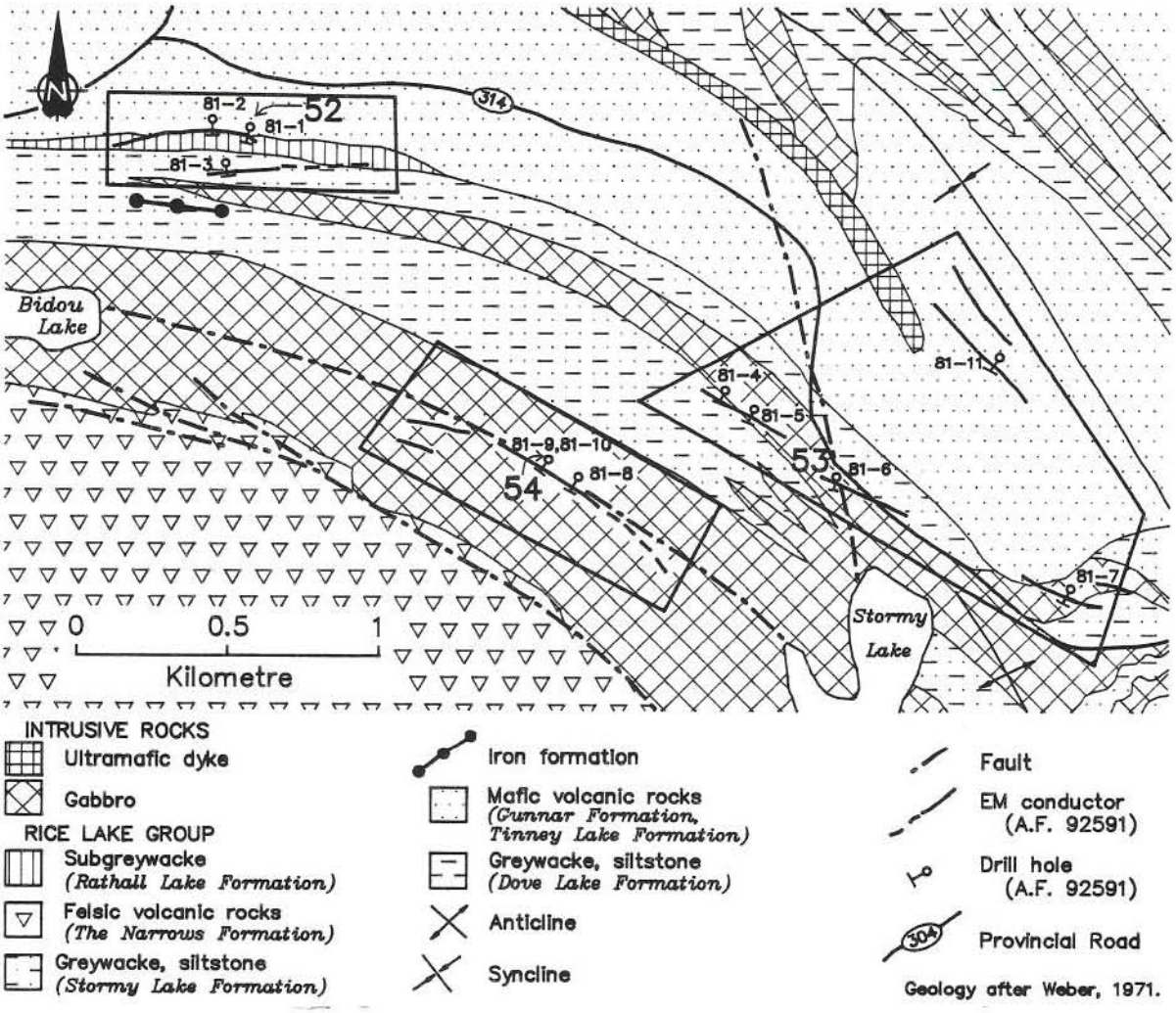


Figure 52-1: Geological setting of occurrences 52, 53 and 54 (52L/14).

LOCATION: **53**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5637074N/338659E

ACCESS: Via Provincial Road 314.

AREA: Approximately 0.7 km north of Stormy Lake (Fig. 52-1).

AIRPHOTO: A24709-233

EXPLORATION SUMMARY:

In 1981 Great Basins Petroleum Limited, in joint venture with Ocelot Industries Limited and Klon Exploration Company Limited, conducted EM and magnetometer surveys, a limited amount of 1:3000 geological mapping and drilled five holes totalling 359 m to test EM conductors on part of a property that includes CB 12751, CB 12752, CB 12753 and CB 12756 (A.F. 92591).

GEOLOGICAL SETTING:

The area is underlain by a sequence of Rice Lake Group felsic and mafic volcanic rocks and immature sedimentary rocks that have been intruded by gabbroic sills and an ultramafic dyke (Fig. 52-1); strata have been folded and faulted. Drill holes intersected quartz-feldspar porphyry, greywacke and gabbro (A.F. 92591). Core from DDH 81-6 also contained magnetiferous iron formation layers up to 0.6 m within a unit of greywacke. DDH 81-11 intersected mafic volcanic rocks and a narrow fine grained grey dyke.

MINERALIZATION:

In DDH 81-6 greywacke with interbedded iron formation contains concordant quartz±carbonate veining and an unspecified amount of pyrite; mafic volcanic rocks also contain pyrite blebs and stringers associated with abundant quartz-carbonate veinlets. DDH 81-5 intersected 0.1 m of black siltstone with 50% very fine grained pyrrhotite. DDH 81-4 contained only trace pyrite in local, contorted, brecciated areas of greywacke with associated quartz veining (A.F. 92591).

DDH 81-7 contained minor pyrite associated with quartz veins in mafic volcanic rocks and greywacke; two fault zones (1.3 and 5.7 m in core length) with quartz-carbonate veinlets and minor chloritization were intersected, however, they contained only trace to minor pyrite. DDH 81-11 intersected two fault zones (5.2 m and 12.2 m in core length) in mafic volcanic (fragmental?) rocks. These zones contain stockworks of quartz-carbonate veinlets and an unspecified amount of pyrrhotite in brecciated bands, in veinlets, along fracture planes, and disseminated throughout the rock.

GEOCHEMICAL DATA:

Drill core samples contained nil or trace Au, except for one 0.4 m sample of mafic volcanic rock in DDH 81-6 that assayed 1.0 g/t Au (A.F. 92591).

CLASSIFICATION:

Vein type deposit; multiple veins. Greywacke and mafic volcanic rocks contain minor pyrite associated with multiple quartz-carbonate veinlets.

REFERENCES:

Assessment File 92591
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; **in** Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **54**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 5637069N/337680E

ACCESS: Via Provincial Road 314 and traverse.

AREA: 1.0 km northwest of Stormy Lake (Fig. 52-1).

AIRPHOTO: A24709-233

EXPLORATION SUMMARY:

In 1981 Great Basins Petroleum Limited, in joint venture with Ocelot Industries Limited and Klon Exploration Company Limited, conducted EM and magnetometer surveys, a limited amount of 1:3000 geological mapping and drilled three holes totalling 186 m to test EM conductors on part of a property that includes CB 12751, CB 12752, CB 12753 and CB 12756 (A.F. 92591).

GEOLOGICAL SETTING:

The area is underlain by a sequence of Rice Lake Group felsic and mafic volcanic rocks and immature sedimentary rocks that have intruded by gabbroic sills and an ultramafic dyke (Fig. 52-1); strata have been folded and faulted. Drill holes intersected greywacke; DDH 81-8 also contains a 12.5 m unit of greenish-grey, talcose, mottled, intensely foliated gabbro (A.F. 92591).

MINERALIZATION:

DDH 81-8, 81-9 and 81-10 intersected a fractured, brecciated, vuggy, talcose, chloritized Fe-stained fault zone with very thin quartz-carbonate veinlets that ranges from 4.6 to 15.8 m in core length. Minor (to moderate?) amounts of very fine grained pyrite are inhomogeneously dispersed throughout the fault zone in DDH 81-9 and 81-10, but sulphide minerals were not identified in the zone in DDH 818. Trace to minor pyrite is disseminated locally in gabbro and greywacke throughout the three drill holes (A.F. 92591).

GEOCHEMICAL DATA:

Drill core samples contained nil or trace Au (A.F. 92591).

CLASSIFICATION:

Vein type deposit; single vein. A fault zone in greywacke contains quartz-carbonate veinlets and minor pyrite.

REFERENCES:

Assessment File 92591
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **55**

NAME: (A.F. - Mineralization intersected by diamond drilling) IMP Group DDH I-6 to I-9

UTM: 5651333N/332696E

ACCESS: Via Provincial Road 314.

AREA: Between Bennet and Palomar lakes.

AIRPHOTO: A24712-48

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out an exploration program in 1973 that consisted of linecutting, HLEM surveys and a four hole diamond drill program totalling 235.1 m, initially selected on the basis of an airborne geophysical survey (A.F. 92094).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation argillite flanked to the south by The Narrows Formation felsic fragmental rocks, and to the north by Wanipigow River Plutonic Complex quartz diorite (Fig. 55-1). Drilling intersected sedimentary rocks that contain thin quartz veins, sulphide-bearing layers and iron formation (A.F. 92094).

MINERALIZATION:

DDH I-6 intersected several layers with 5-70% pyrite between 15.1 and 20.2 m within a sequence of metasedimentary rocks. A layer of iron formation approximately 1 m thick was intersected at 22.1 m.

DDH I-7 and I-8 intersected pyrite-bearing quartz stringers hosted by sedimentary rocks.

DDH I-9 intersected up to 40% pyrite between 22.8 and 31.3 m, and several sections with up to 80% pyrite between 35.3 and 45.7 m in sedimentary rocks. A layer of graphitic schist with 8% pyrite was intersected between 52.4 and 54.2 m, and iron formation (facies unspecified) occurred between 32.9 and 38.9 m (A.F. 92094).

GEOCHEMICAL DATA:

Five out of a total of seven drill core samples contained trace Au; the other two samples contained up to 300 ppb Au. These samples returned trace to 0.04% Cu (A.F. 92094).

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. This mineralization possibly represents a distal facies of a massive sulphide type deposit.

REFERENCES:

Assesssment File 92094
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

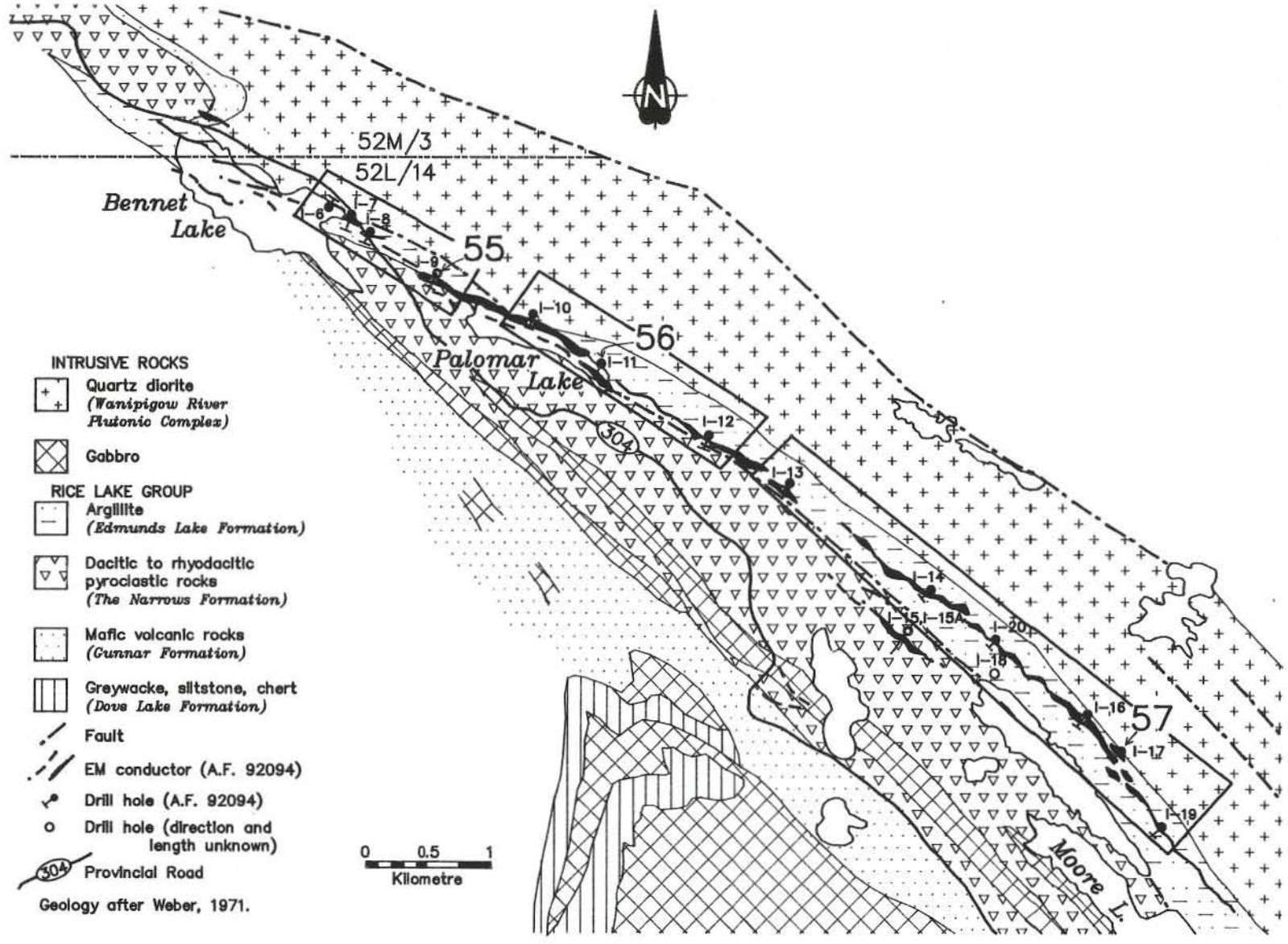


Figure 55-1: Geological setting of occurrences 55, 56 and 57 (52L/14).

LOCATION: **56**

NAME: (A.F. - Mineralization intersected by diamond drilling) IMP Group DDH I-10 to I-12

UTM: 5650667N/333931E

ACCESS: Via Provincial Road 314.

AREA: Adjacent to and southeast of Palomar Lake (Fig. 55-1).

AIRPHOTO: A24710-46

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out an exploration program in 1973 that consisted of linecutting, HLEM surveys and a three hole diamond drill program totalling 135.6 m initially selected on the basis of an airborne geophysical survey (A.F. 92094).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation argillite flanked to the south by The Narrows Formation felsic fragmental rocks and to the north by Wanipigow River Plutonic Complex quartz diorite (Fig. 55-1). Drill logs indicate that the mineralized area is underlain by a suite of massive to tuffaceous mafic to felsic rocks (A.F. 92094).

MINERALIZATION:

DDH I-10 intersected a 2.2 m thick layer of near solid pyrite that is hosted by rhyolitic tuffaceous to massive rocks. DDH I-11 intersected pyrite-bearing layers ranging from 20% to near solid sulphide in mafic to felsic tuff between 48.5 and 59.4 m. DDH I-12 intersected 10% pyrite in mafic to felsic tuff between 26.1 m and 27 m (A.F. 92094).

GEOCHEMICAL DATA:

Two drill core samples contained trace Au (A.F. 92094).

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. This mineralization possibly represents a distal part of a massive sulphide deposit.

REFERENCES:

Assesssment File 92094
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **57**

NAME: (A.F. - Mineralization intersected by diamond drilling) IMP Group DDH I-13 to I-20

UTM: 5647474N/337618E

ACCESS: Via Provincial Road 314.

AREA: Palomar and Partridge lakes (Fig. 55-1).

AIRPHOTO: A24670-95, A24709-228

EXPLORATION SUMMARY:

Manitoba Mineral Resources Limited carried out an exploration program in 1973 that consisted of linecutting, HLEM surveys and a nine hole diamond drill program totalling 465.9 m, initially selected on the basis of an airborne geophysical survey (A.F. 92094).

GEOLOGICAL SETTING:

The area is underlain by Edmunds Lake Formation argillite, flanked to the south by The Narrows Formation felsic fragmental rocks and to the north by Wanipigow River Plutonic Complex quartz diorite (Fig. 55-1). Drill logs indicate that the mineralized area is underlain by sedimentary and minor mafic volcanic rocks. Iron formation (facies unspecified) and graphitic slate are also interlayered with these rocks (A.F. 92094).

MINERALIZATION:

DDH I-13 intersected iron formation from 37.8 m to 38.1 m, and 8% pyrite and 2% pyrrhotite between 38.1 m and 38.8 m. DDH I-14 intersected two layers (18.6 and 5.2 m in core length) of iron formation, and a layer of near solid pyrite between 40.3 m and 40.9 m. DDH I-15 and I-15A, collared at the same location and drilled with the same dip, intersected felsic to intermediate tuff containing 2.1 m of 10-15% pyrrhotite, pyrite and minor chalcopyrite. DDH I16 intersected two sections containing 20% pyrrhotite and up to 5% pyrite, and up to 30% pyrite and 25% pyrrhotite, respectively, hosted by iron formation, siltstone and arkose. DDH I-17 intersected a layer of graphitic shale, siltstone and quartzite containing 40% pyrrhotite, 10% pyrite and minor chalcopyrite in sedimentary and mafic volcanic rocks between 12.5 and 19 m. DDH I-18 intersected 2.7 m of felsic to intermediate tuff containing 10% pyrrhotite, pyrite and minor chalcopyrite. DDH I-19 intersected an indeterminate amount of pyrite, pyrrhotite and minor chalcopyrite between 7.1 and 18.7 m in sedimentary rocks. DDH I-20 intersected up to 15% pyrite in mafic tuff and sedimentary rocks between 35.0 and 36.5 m (A.F. 92094).

GEOCHEMICAL DATA:

Two of 23 samples of drill core assayed 300 ppb Au; the remainder contained nil to trace Au. Copper concentrations (where reported) range from 0.02 to 0.2%, with the exception of one sample, approximately 30 cm, from DDH I-19 containing 1.07% Cu at 7.3 m depth (A.F. 92094).

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assesssment File 92094
Manitoba Energy and Mines, Minerals Division.

Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

LOCATION: **58**

NAME: (A.F. - Mineralization intersected by diamond drilling) BAY Group

UTM: 5639015N/343503E

ACCESS: Via boat on Beresford Lake.

AREA: East of Beresford Lake.

AIRPHOTO: A24709-98, -99, -100, -175

EXPLORATION SUMMARY:

Noranda Exploration Company Limited entered into a grubstake agreement with V. Colcleugh in 1968 to explore the Bay, Mag and Vic claims located east and northeast of Beresford Lake. Twelve holes totalling 961 m were drilled in 1969 after completion of a ground EM survey (A.F. 91724, 91725, 91340, 91341, 91772). This survey was complemented by two additional drill holes totalling 57.3 m (A.F. 91341) and the collection of approximately 103 rock samples for geochemical analysis.

GEOLOGICAL SETTING:

The area is underlain by a suite of fine grained felsic detrital rocks (argillite, sandstone, arkose and quartzite) interlayered with mafic volcanic-derived detrital rocks of the Edmunds Lake Formation (Fig. 58-1). These predominantly sedimentary rocks grade into a suite of volcanic rocks dominated by massive, fine grained andesite to basalt. Rare, 3-5 cm thick chert beds are generally associated with mafic volcanic-derived sedimentary rocks and argillite beds.

Pillows, as well as beds of angular pillow fragments, observed locally within this sequence lead to the interpretation that these rocks were deposited in a subaqueous environment. Several metre-thick gabbroic-textured units, which are composed chiefly of coarse grained hornblende, are typically in gradational contact with the fine grained massive flows, and are interpreted as being the coarse grained facies of these flows.

Discontinuous iron formation, generally 50-100 m long and ranging from a few centimetres to 50 m thick, is hosted by the mafic rock suite. The iron formation typically consists of magnetite-rich layers banded with cherty layers. The magnetite crystals are commonly rounded and pitted. Several subparallel south-striking shear zones are preferentially located at the contacts of blocks of different lithologies. A dominant, laterally continuous shear zone straddles the contact between the mainly sedimentary rocks in the west and the volcanic-derived rocks in the east. The sheared rocks are characterized by minor concentrations of sulphide minerals and are rusty stained, thus attracting extensive trenching efforts.

DDH 1 intersected intermediate to mafic volcanic flows with lesser banded tuff, "quartz-biotite gneiss with garnetiferous, chloritic and volcanic sections", and a gabbroic dyke (A.F. 91724). DDH 2, 4 and 5 intersected mafic volcanic rocks (A.F. 91724, 91725). DDH 3 intersected massive to foliated mafic volcanic flows and a minor felsic porphyry dyke (A.F. 91725). DDH 6 intersected detrital sedimentary rock, gneiss and mafic volcanic rocks (A.F. 91340). DDH 7 intersected coarse- to fine-grained mafic rocks (A.F. 91724). DDH 8 and 9 intersected sedimentary and mafic volcanic rocks (A.F. 91340). DDH 10 intersected sedimentary rocks, including quartzite and sediment-derived gneiss (A.F. 91340). DDH 11 intersected partly chloritized mafic volcanic rocks, "iron formation" and "altered sediments" (A.F. 91772). DDH 12 intersected chlorite schist interlayered with iron formation, altered gabbro and mafic volcanic rocks (A.F. 91772). DDH B-3 and B-4 intersected mafic volcanic rocks and iron formation (A.F. 91341).

MINERALIZATION:

The following summarizes mineralization intersected in drill holes:

DDH 1. 13.7 m of trace to minor pyrite and trace chalcopyrite in banded tuff and foliated mafic volcanic rocks. Trace to minor pyrite also occurs in numerous shorter sections throughout the drill hole.

DDH 2. 28.2 m of trace to minor pyrite in mafic volcanic rocks (A.F. 91725).

DDH 3. 7.2 m of trace to minor pyrrhotite and pyrite with trace chalcopyrite in mafic volcanic rocks (A.F. 91725).

DDH 4. 66.9 m of trace to minor pyrrhotite, pyrite and chalcopyrite in mafic volcanic flows (A.F. 91725).

DDH 6. 1.2 m of near solid graphite and traces of pyrite and chalcopyrite hosted by felsic sedimentary rocks; numerous additional sections, <1 m, with trace to minor pyrrhotite occur throughout the remainder of the drill core (A.F. 91340).

DDH 7. 8.1 m of trace to minor pyrrhotite and pyrite and trace chalcopyrite in mafic volcanic rocks (A.F. 91724).

DDH 8. 6.9 m containing sections of solid pyrrhotite interlayered with trace pyrite and chalcopyrite hosted by mafic volcanic rocks (A.F. 91340).

DDH 9. Trace to minor pyrrhotite and chalcopyrite in several sections, ≤1 m, throughout the drill core (A.F. 91340).

DDH 10. Three (1.0 m and two 1.2 m) sections of near solid graphite containing trace to minor pyrrhotite or pyrite; in addition, four intersections approximately 1 m thick containing trace to near solid pyrrhotite are hosted by partly sericitized quartzite (A.F. 91340).

DDH 11. Trace to minor pyrite and trace chalcopyrite in iron formation (A.F. 91772).

DDH 12. Trace to minor pyrite and pyrrhotite in iron formation; additionally, trace chalcopyrite is present in one 0.5 m intersection (A.F. 91772).

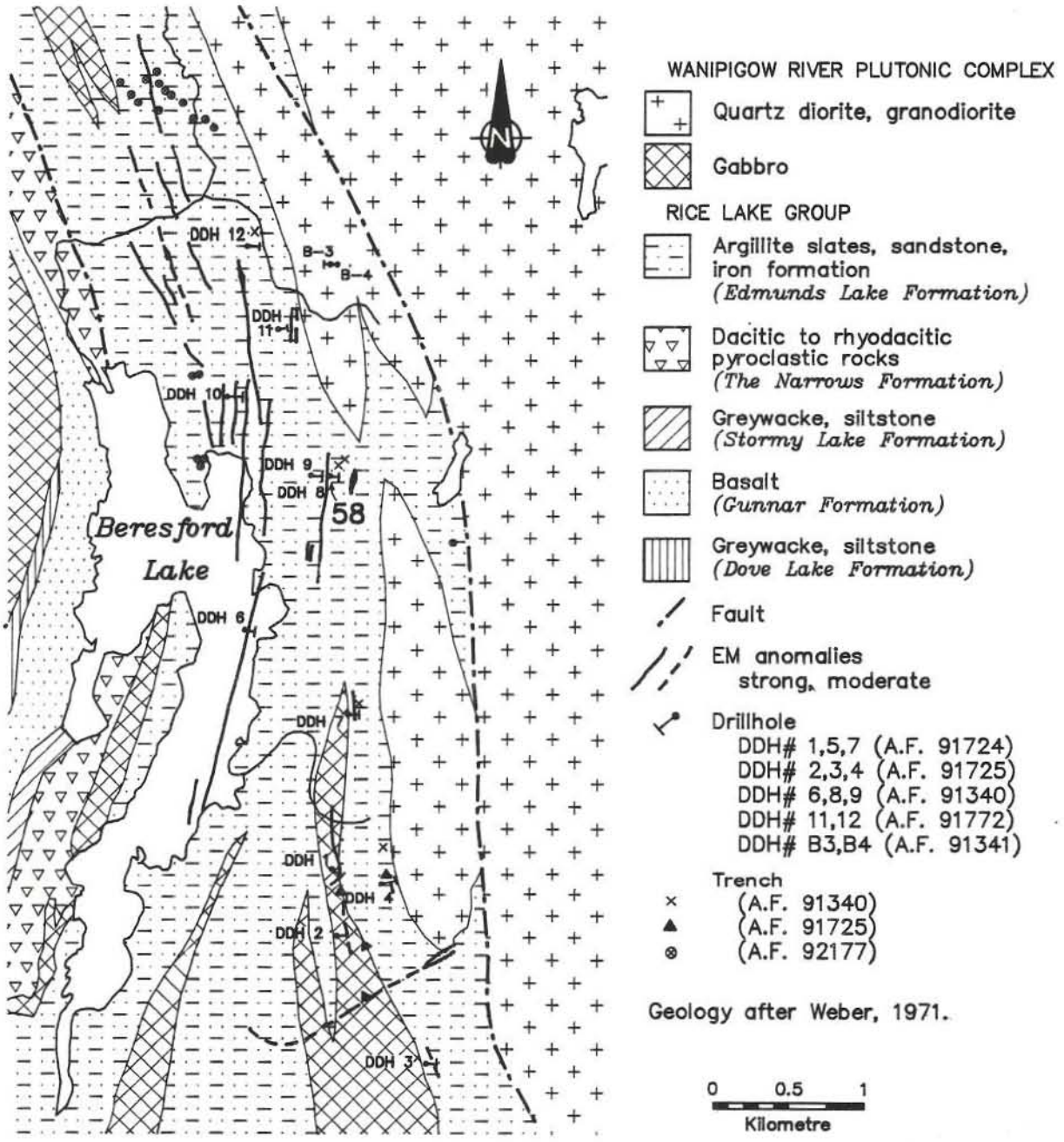


Figure 58-1: Geological setting of occurrence 58 (52L/14).

DDH 5, B-3 and B-4. Did not contain any mineralization (A.F. 91341, 91724).

GEOCHEMICAL DATA:

V. Colcleugh collected 103 rock samples from trenches and outcrops for assay. Most of these samples contained nil to trace Au and Ag, with a maximum concentration of 1.37 g/t Au. Some of these samples were also analyzed for Cu, Ni, Zn and Co, but contained insignificant amounts of these elements. Samples BA-32 and BA-36 are exceptional, with 1.40% and 1.31% Cu, respectively (A.F. 92177).

CLASSIFICATION:

Chemical sediment type deposit; oxide facies iron formation. Trace to near solid sections of sulphide minerals and graphite are hosted by sedimentary rocks, particularly iron formation, and mafic volcanic rocks.

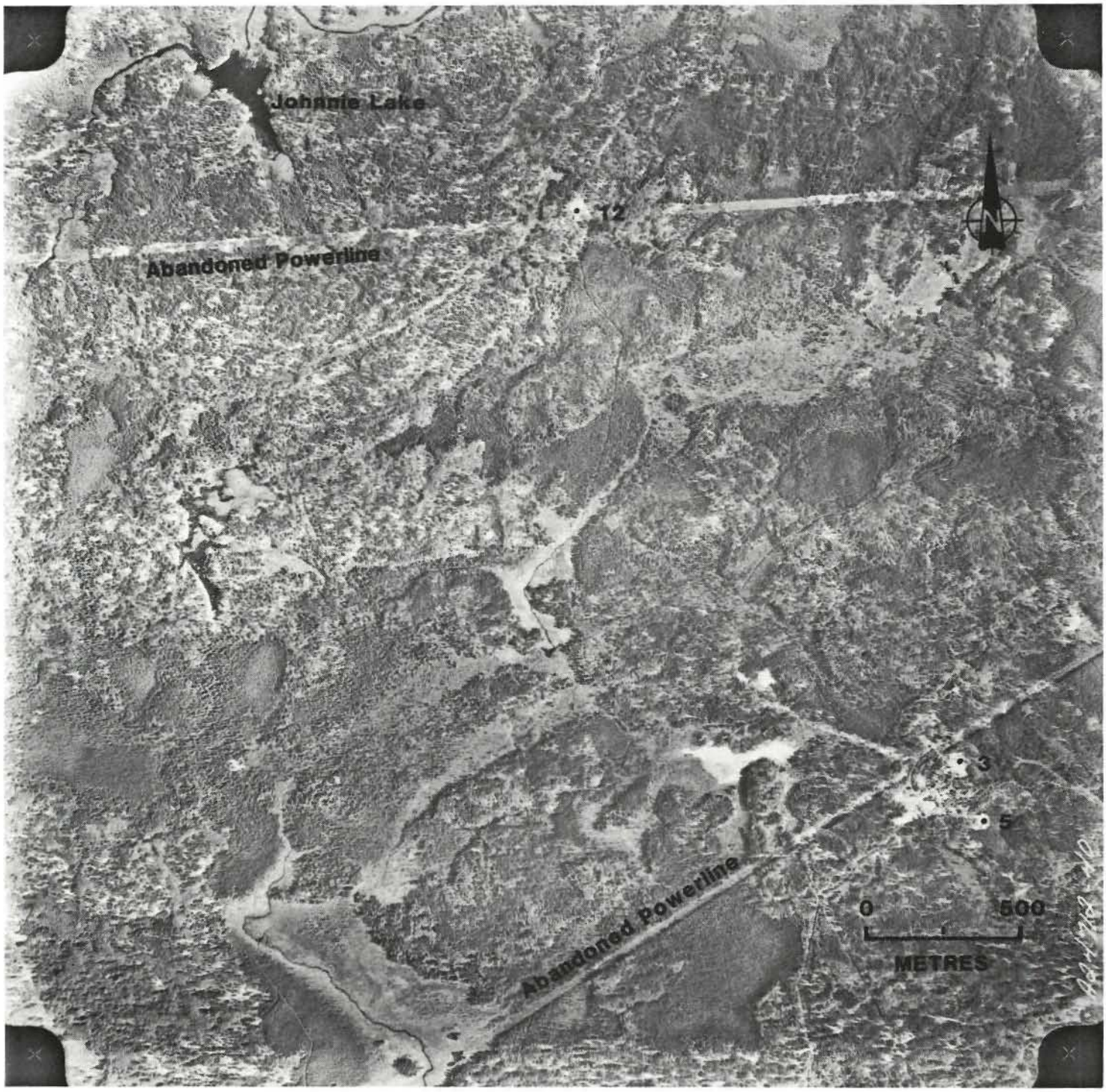
REFERENCES:

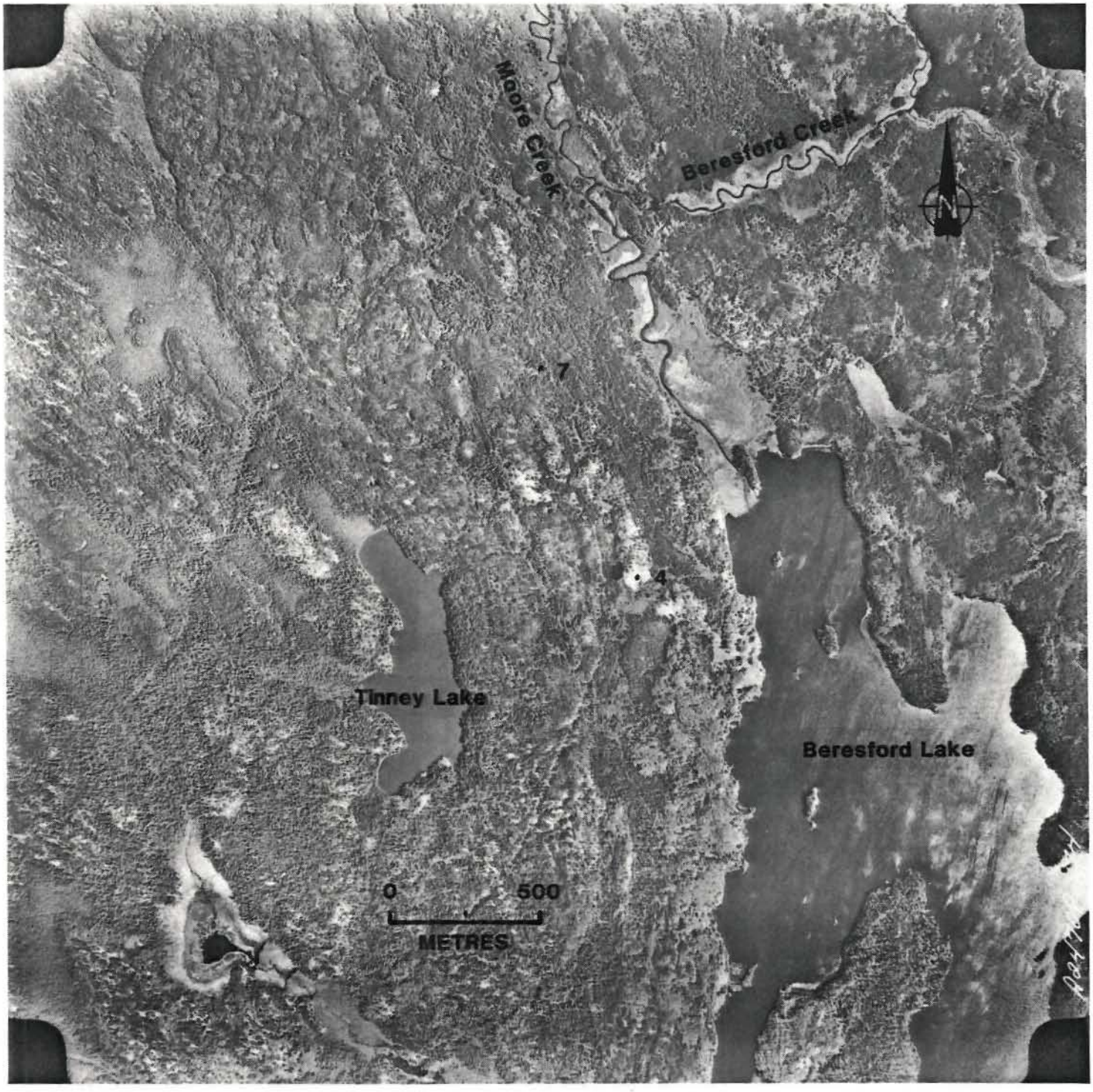
Assessment Files 91340, 91341, 91724, 91725, 91772, 92177 Manitoba Energy and Mines, Minerals Division.

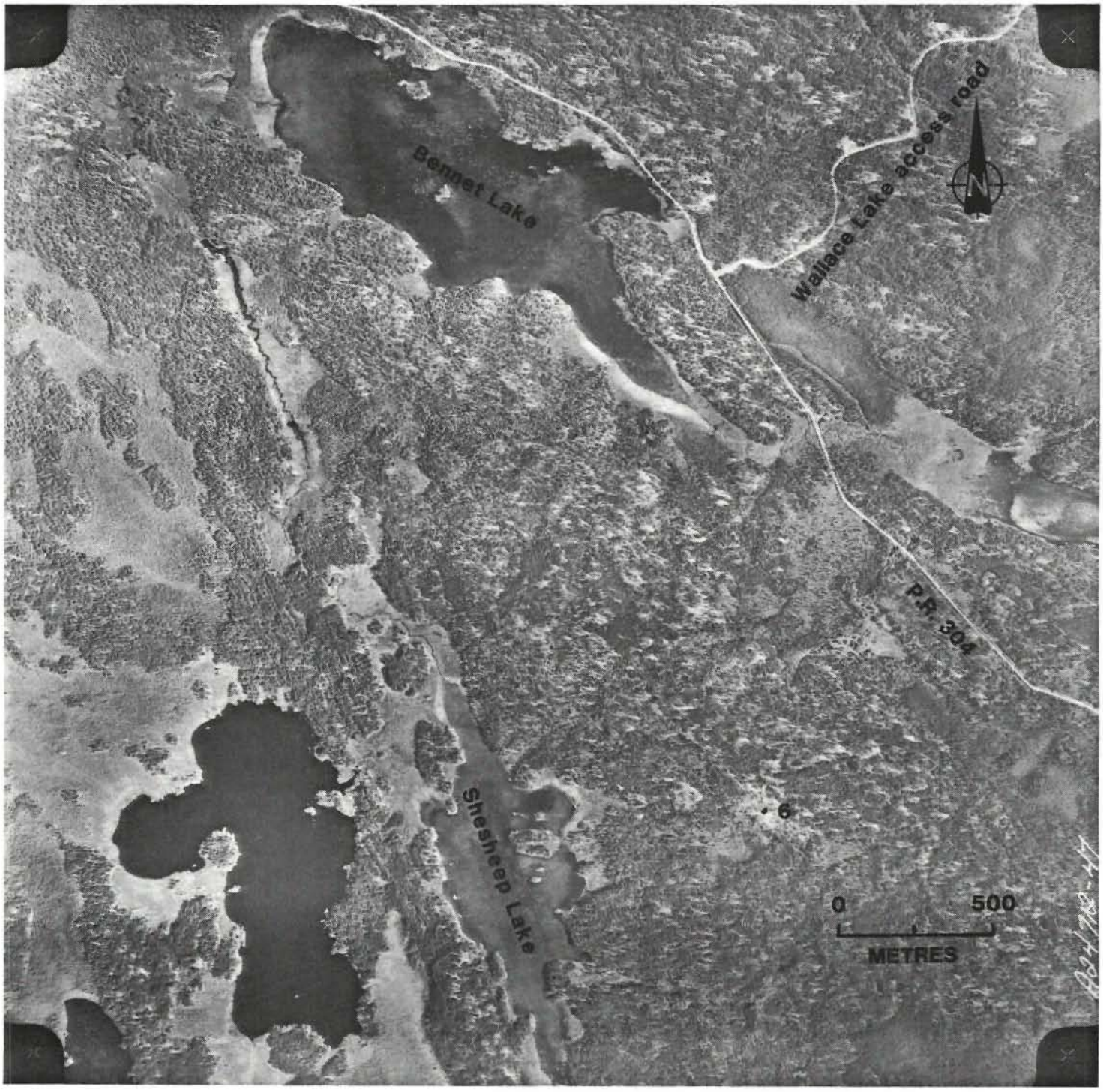
Weber, W.
1971: Geology of the Wanipigow River-Manigotagan River region; in Geology and geophysics of the Rice Lake region, southeastern Manitoba, (W.D. McRitchie and W. Weber, ed.); Manitoba Mines and Natural Resources, Mines Branch, Publication 71-1, Geological Map 71-1/4, 1:63 360.

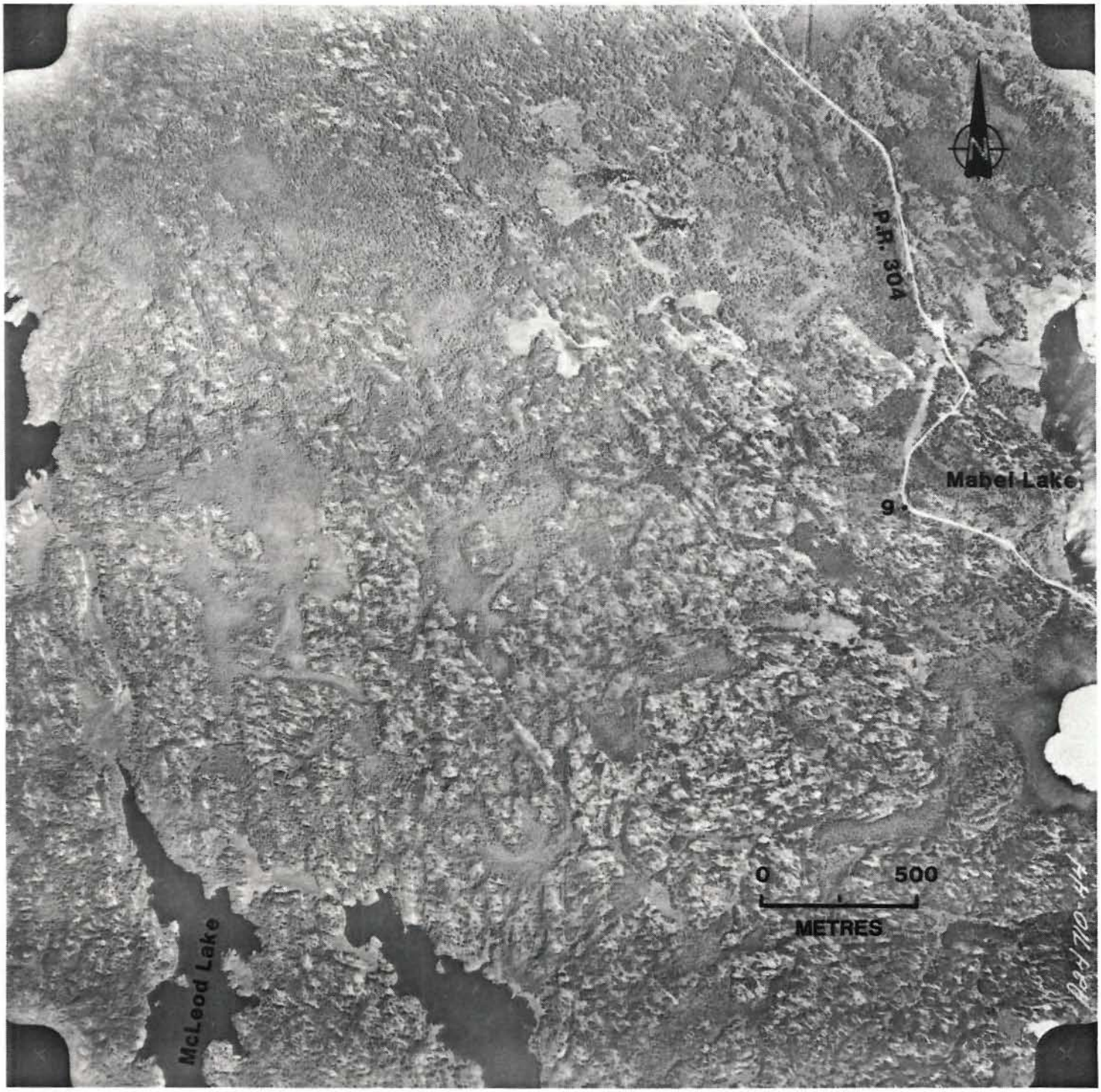
APPENDIX A

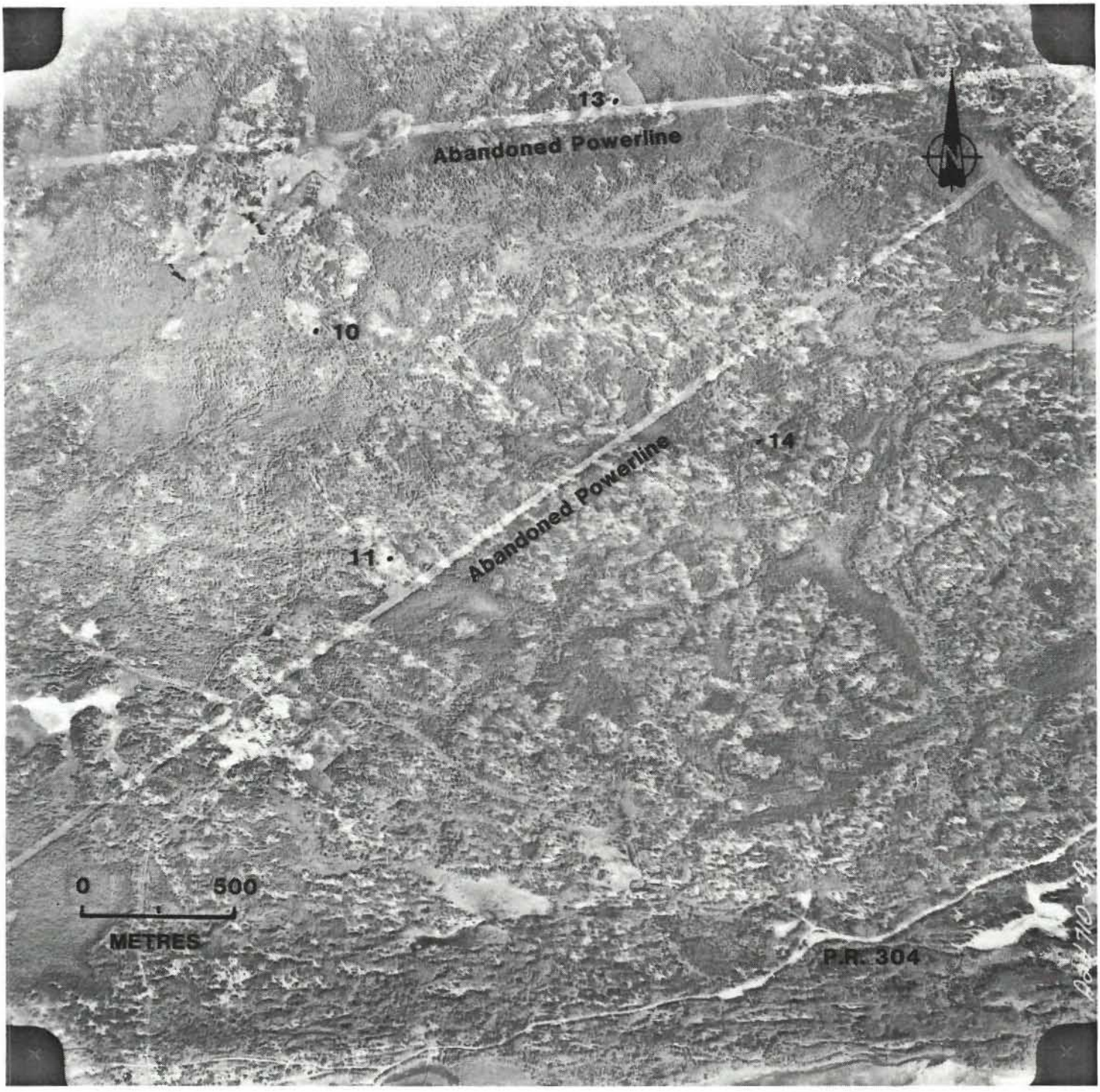
Occurrence locations recorded on airphotos

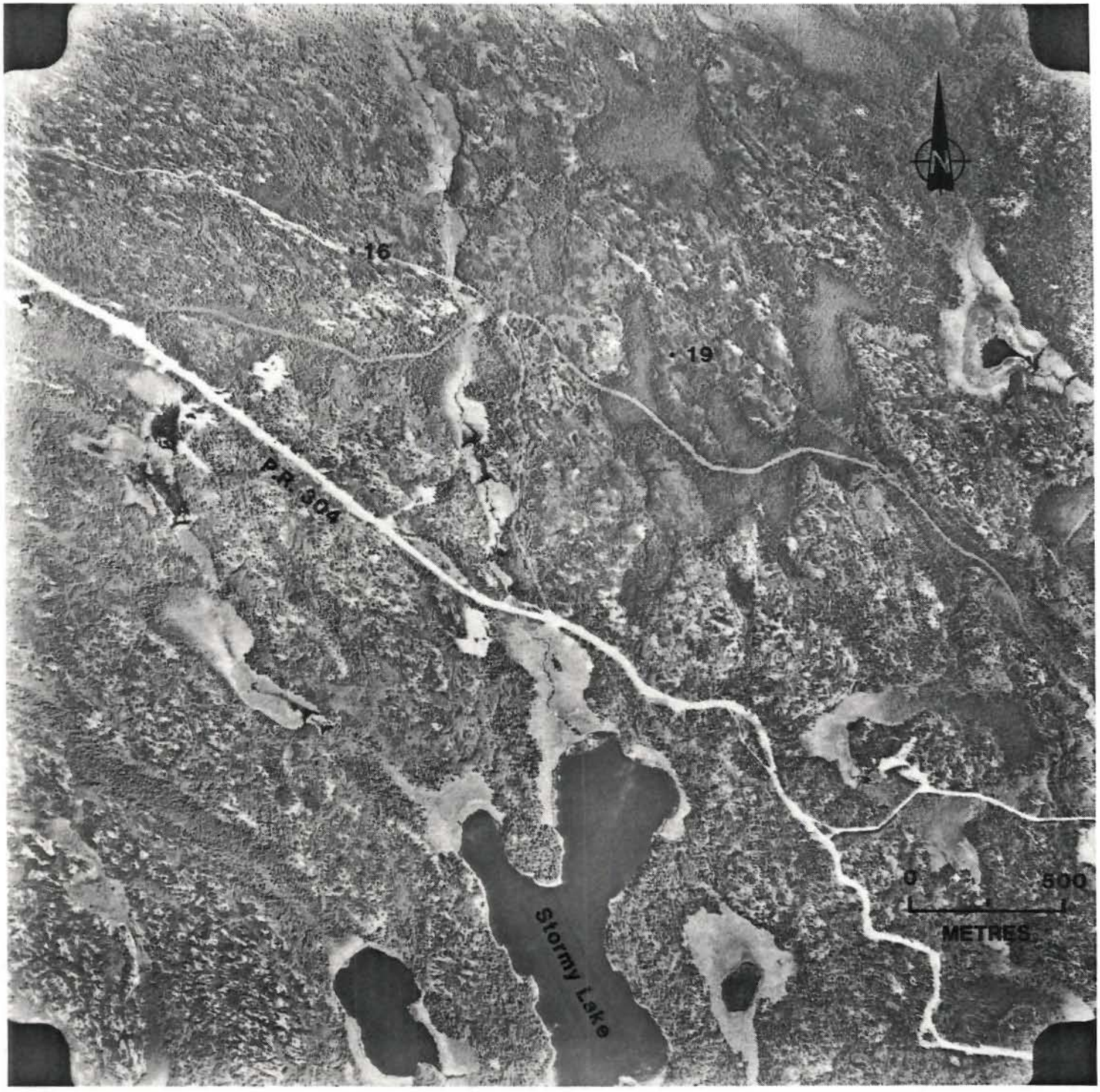

Johnnie Lake
12
Abandoned Powerline
N
3
5
Abandoned Powerline
0
500
METRES

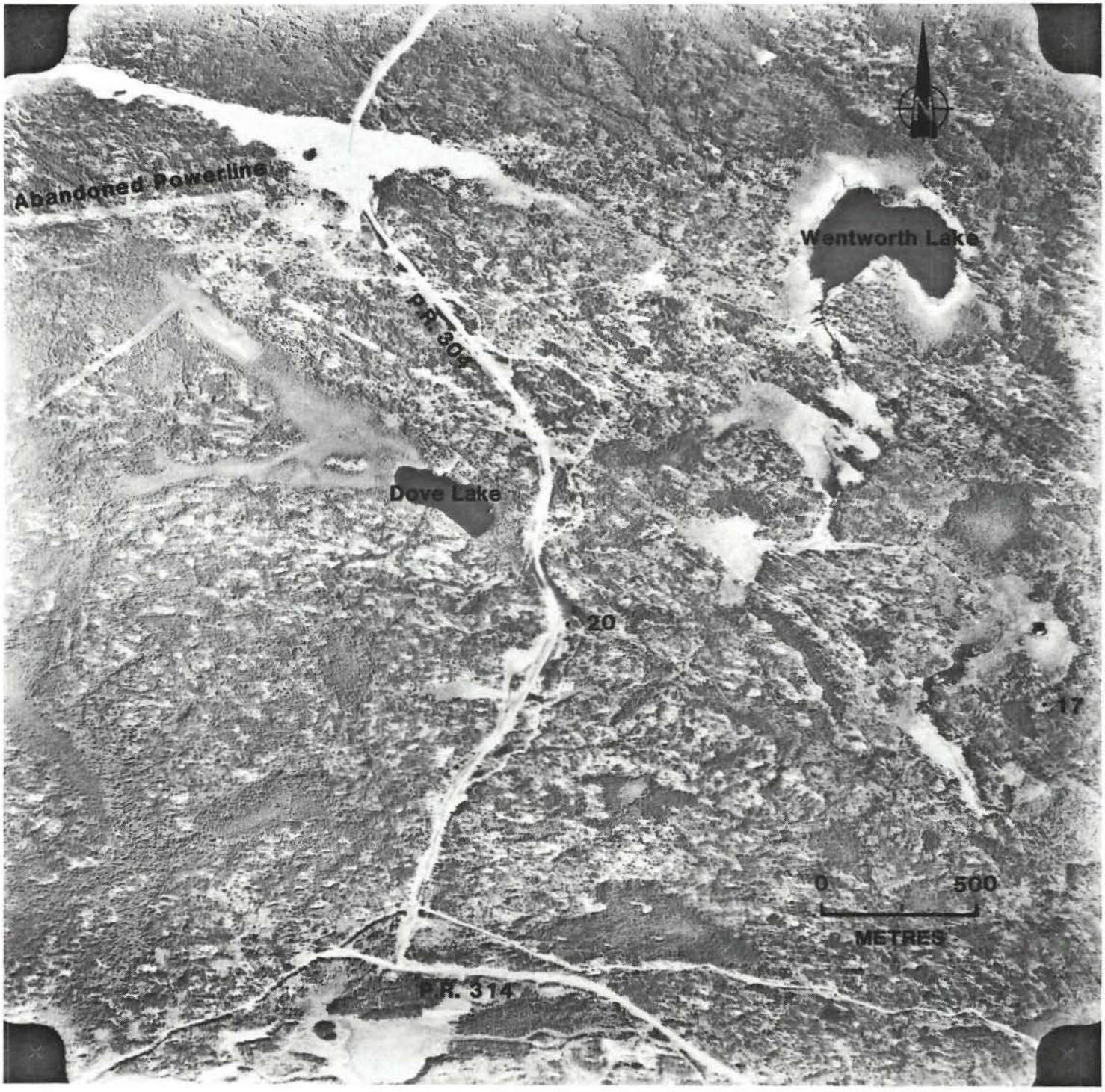

Moore Creek
Beresford Creek
N
7
4
Tinney Lake
Beresford Lake
0
500
METRES

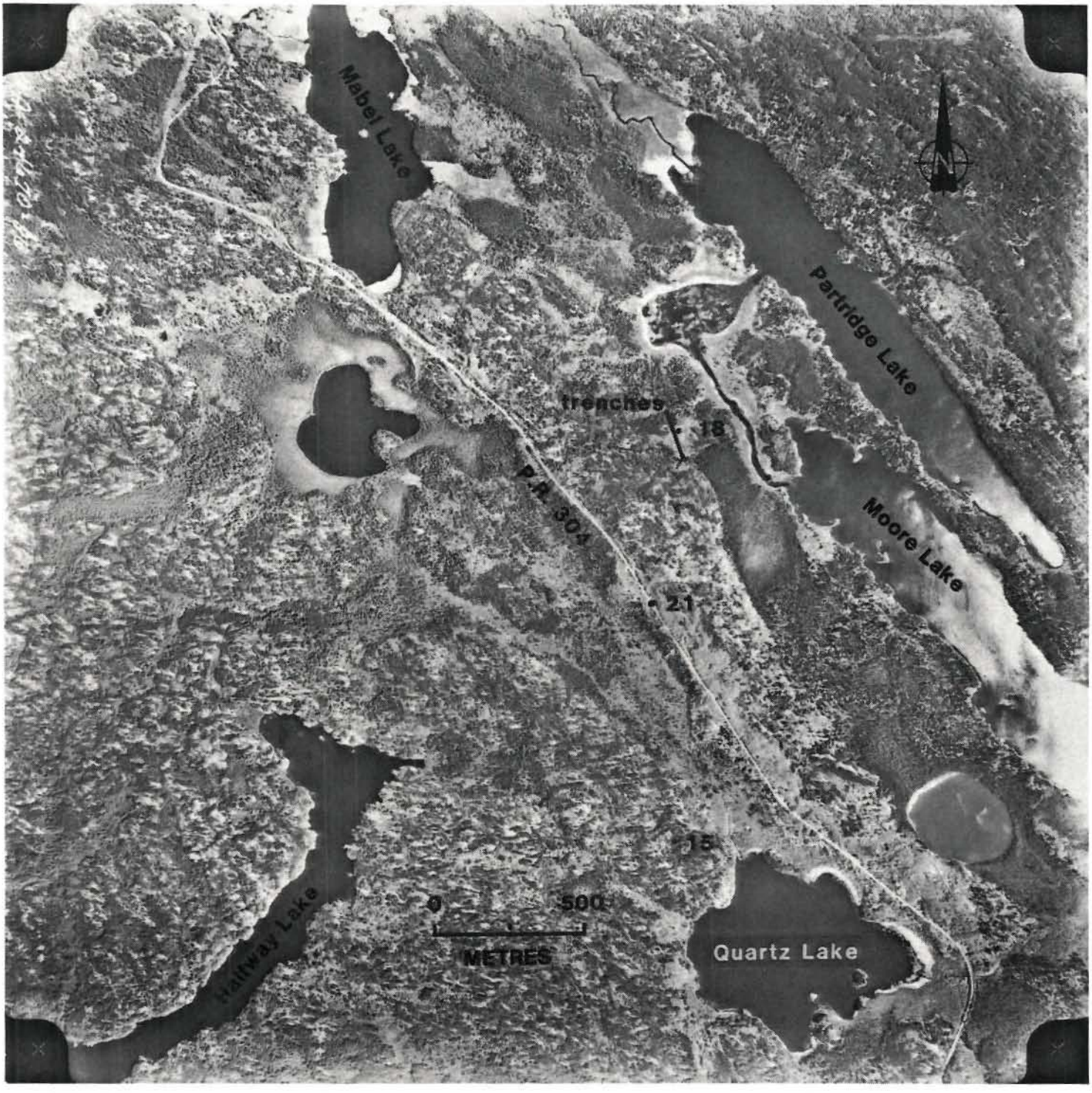

Bennet Lake
Wallace Lake access road
N
P.R. 304
6
Sheshegp Lake
0
500
METRES

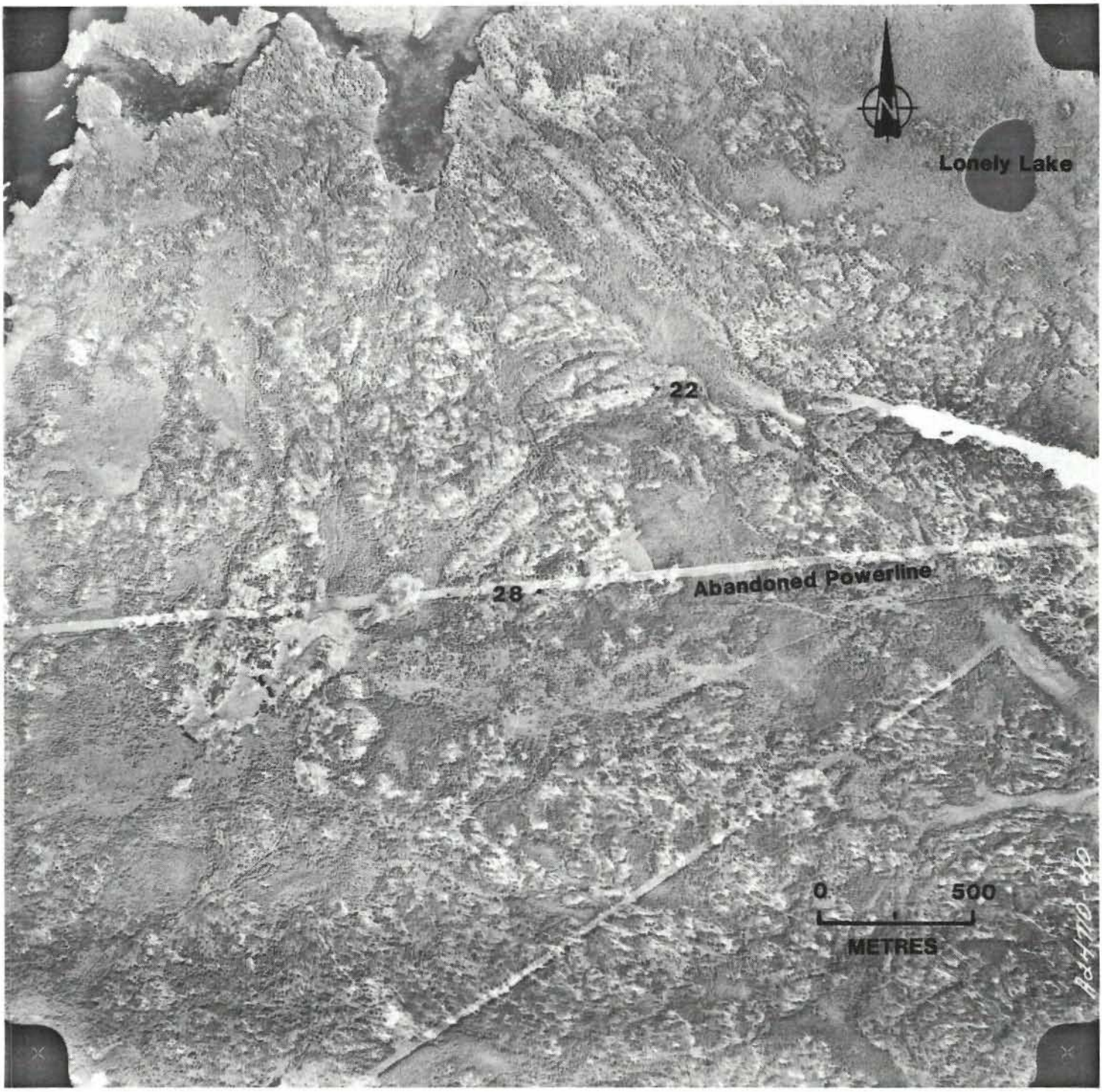

P.R. 304
Mabel Lake
9
0
500
METRES
McLeod Lake


13
Abandoned Powerline
10
14
Abandoned Powerline
11
0
500
METRES
P.R. 304

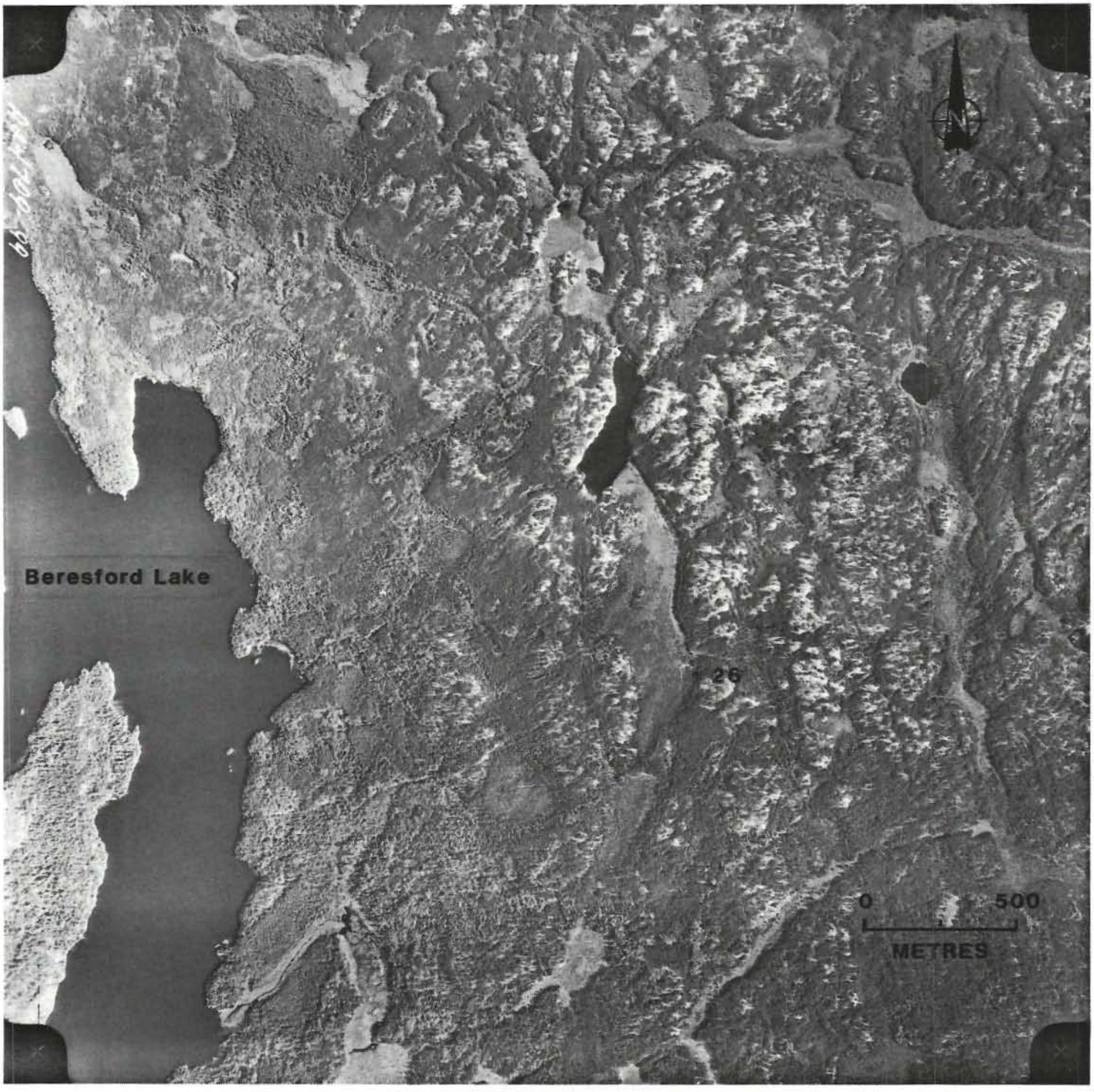

N
16
19
PR 304
Stormy Lake
0
500
METRES


Abandoned Powerline
P.R. 304
Wentworth Lake
Dove Lake
20
17
0
500
METRES
P.R. 314

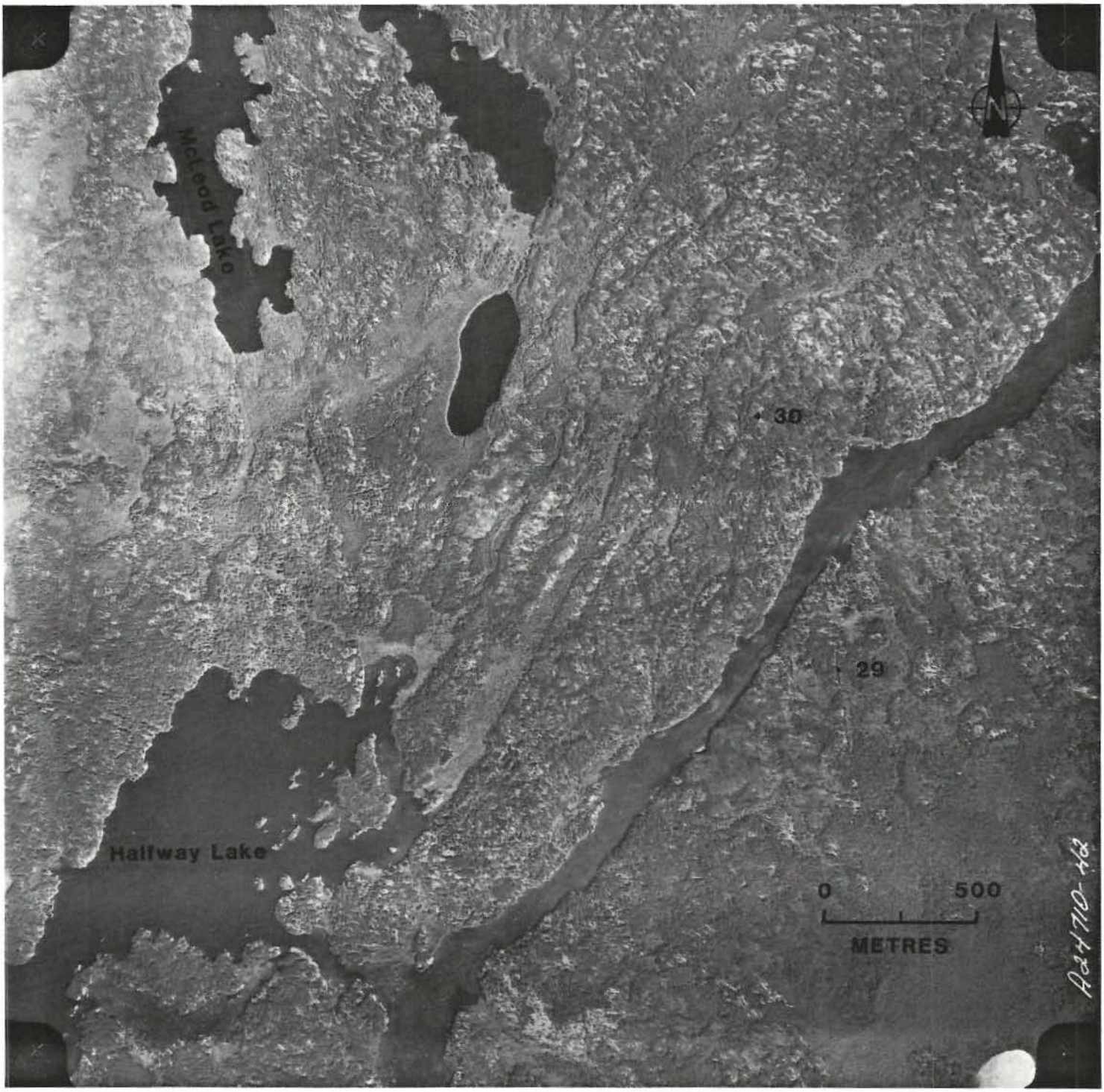

Mabel Lake
Partridge Lake
trenches
18
P.R. 304
Moore Lake
21
15
0
500
METRES
Halfway Lake
Quartz Lake

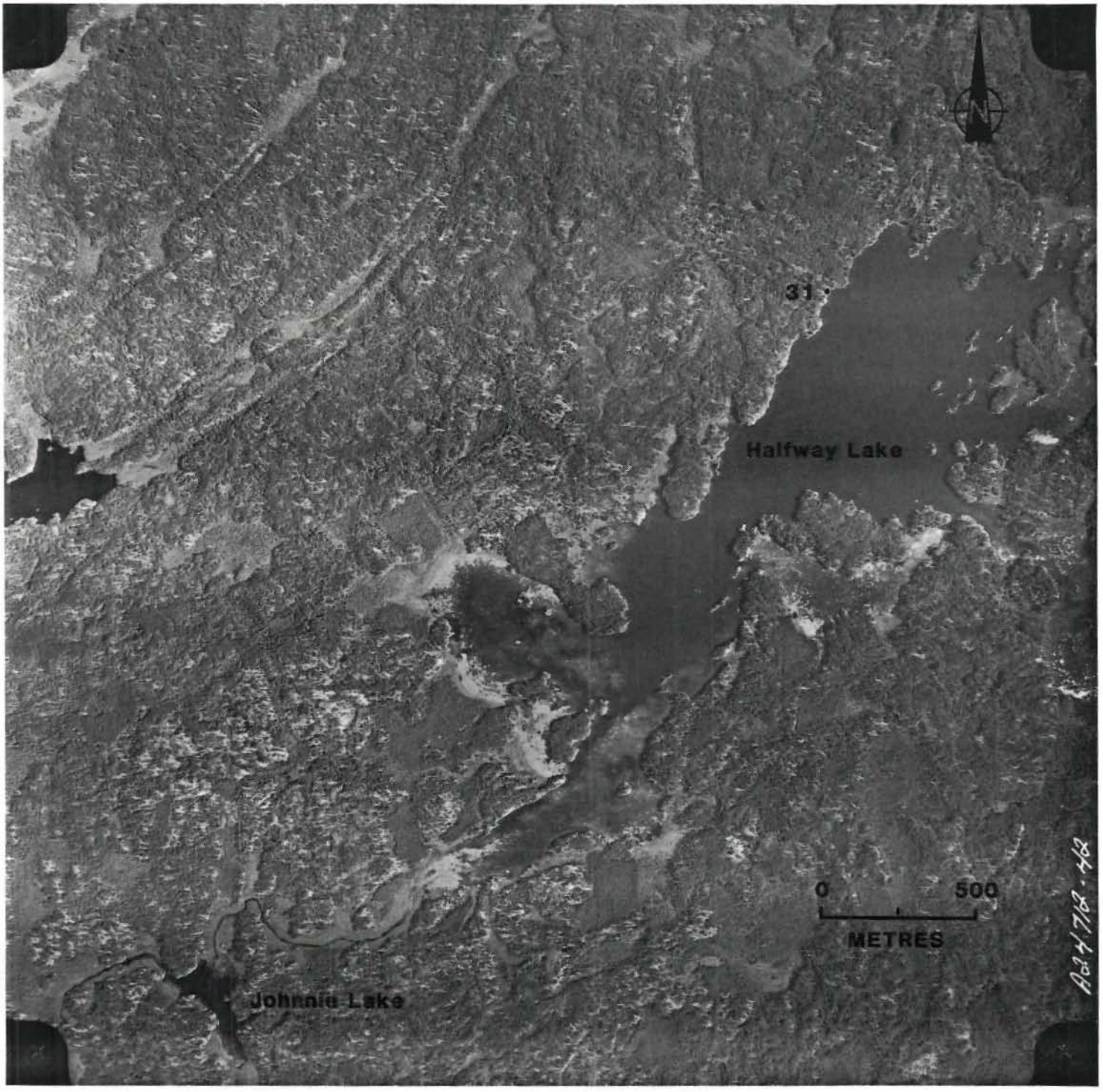

N
Lonely Lake
22
28
Abandoned Powerline
0
500
METRES

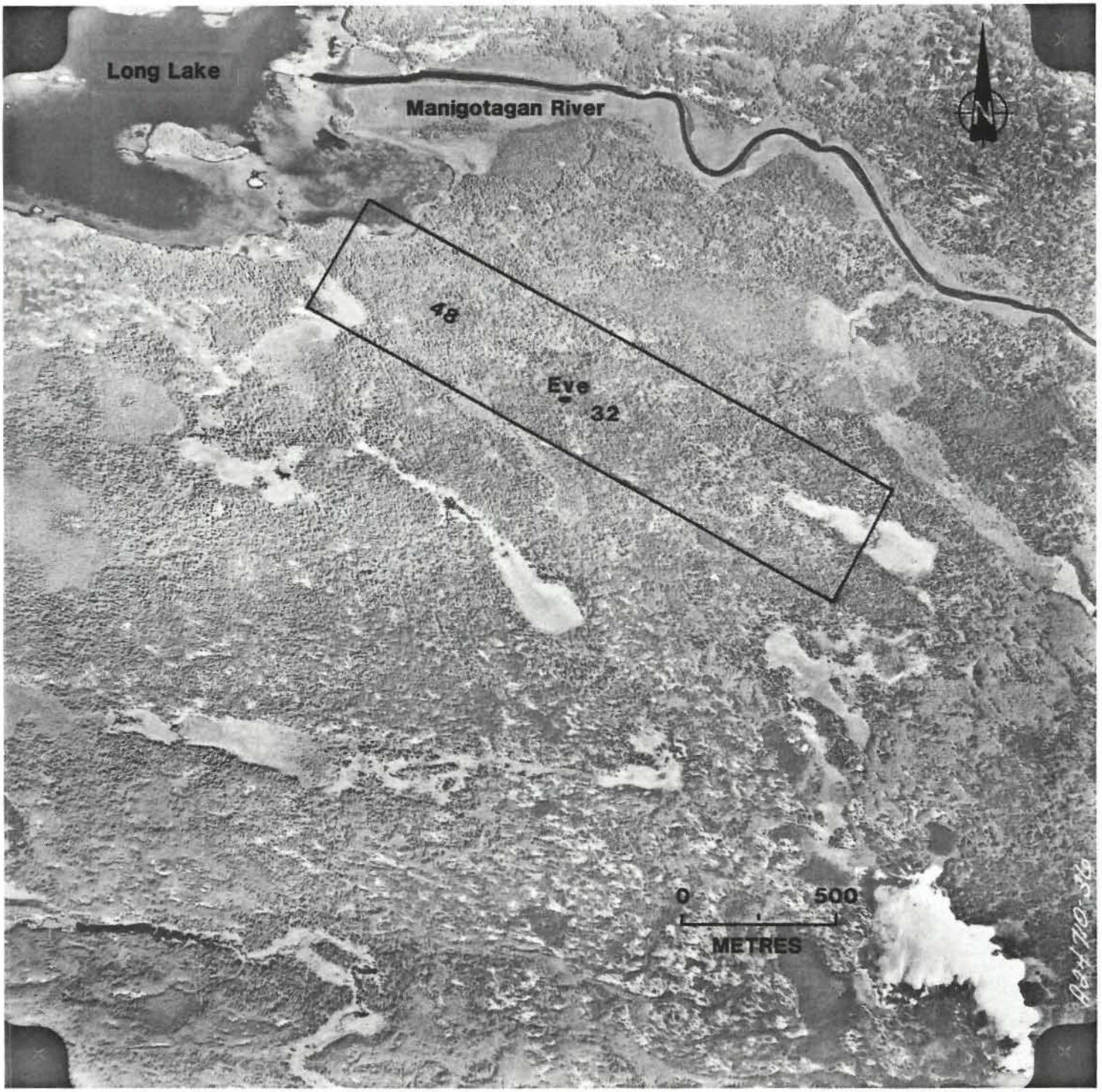

Cliff Lake
N
Wentworth Lake
24
Stovel Lake
25
23
49
0
500
METRES

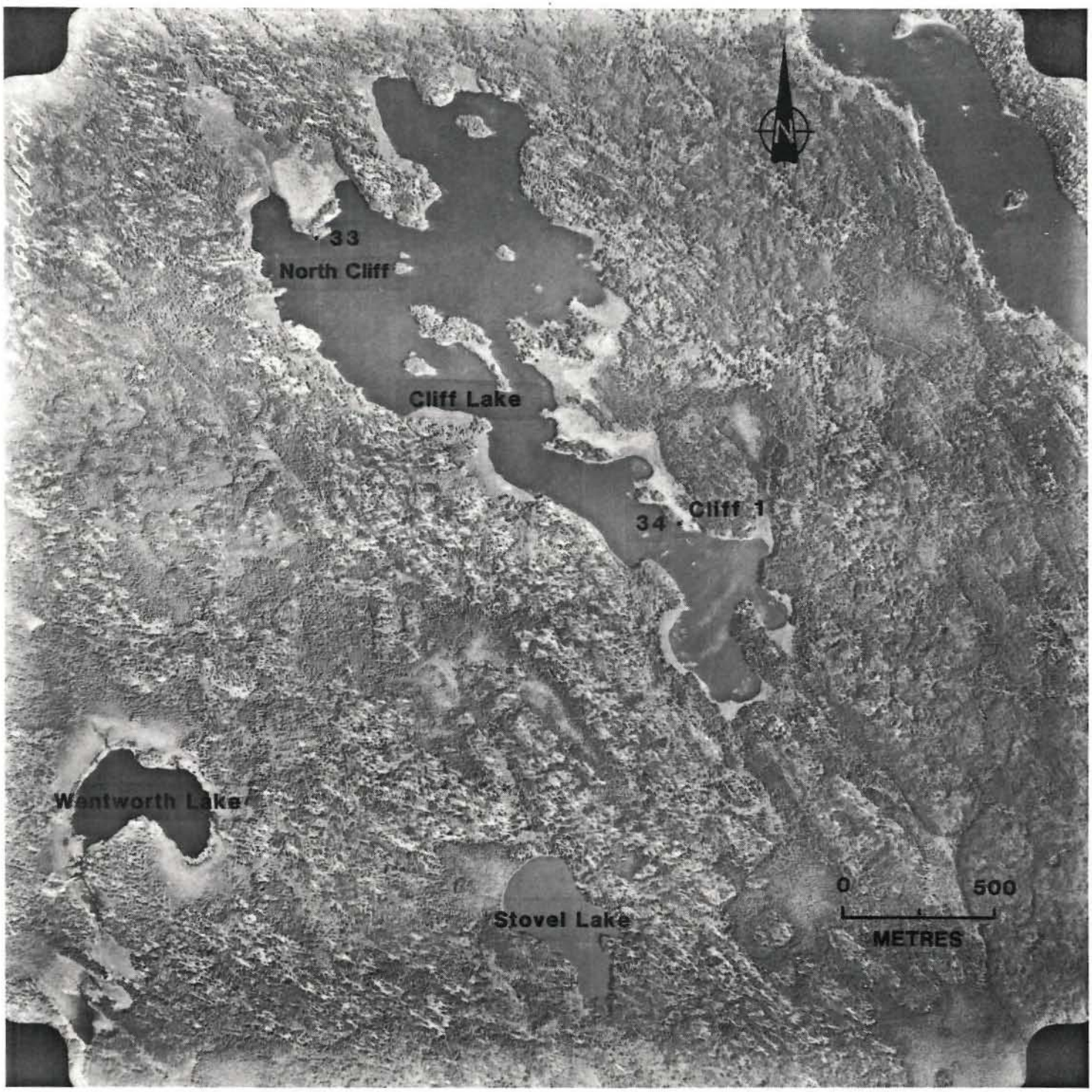

Beresford Lake
126
0
500
METRES

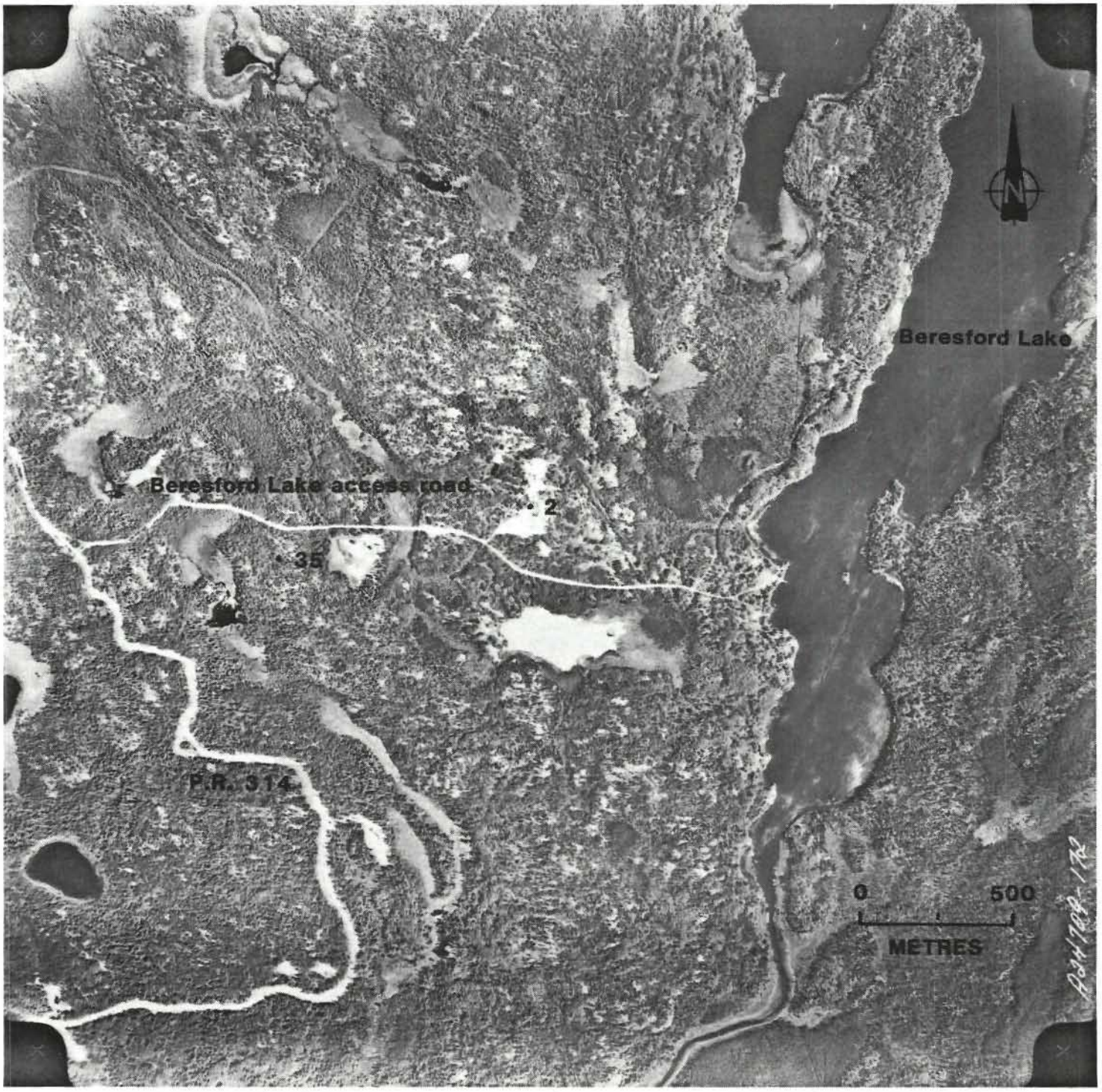

R.R. 304
Moore Lake
27
Cliff Lake
0
500
METRES

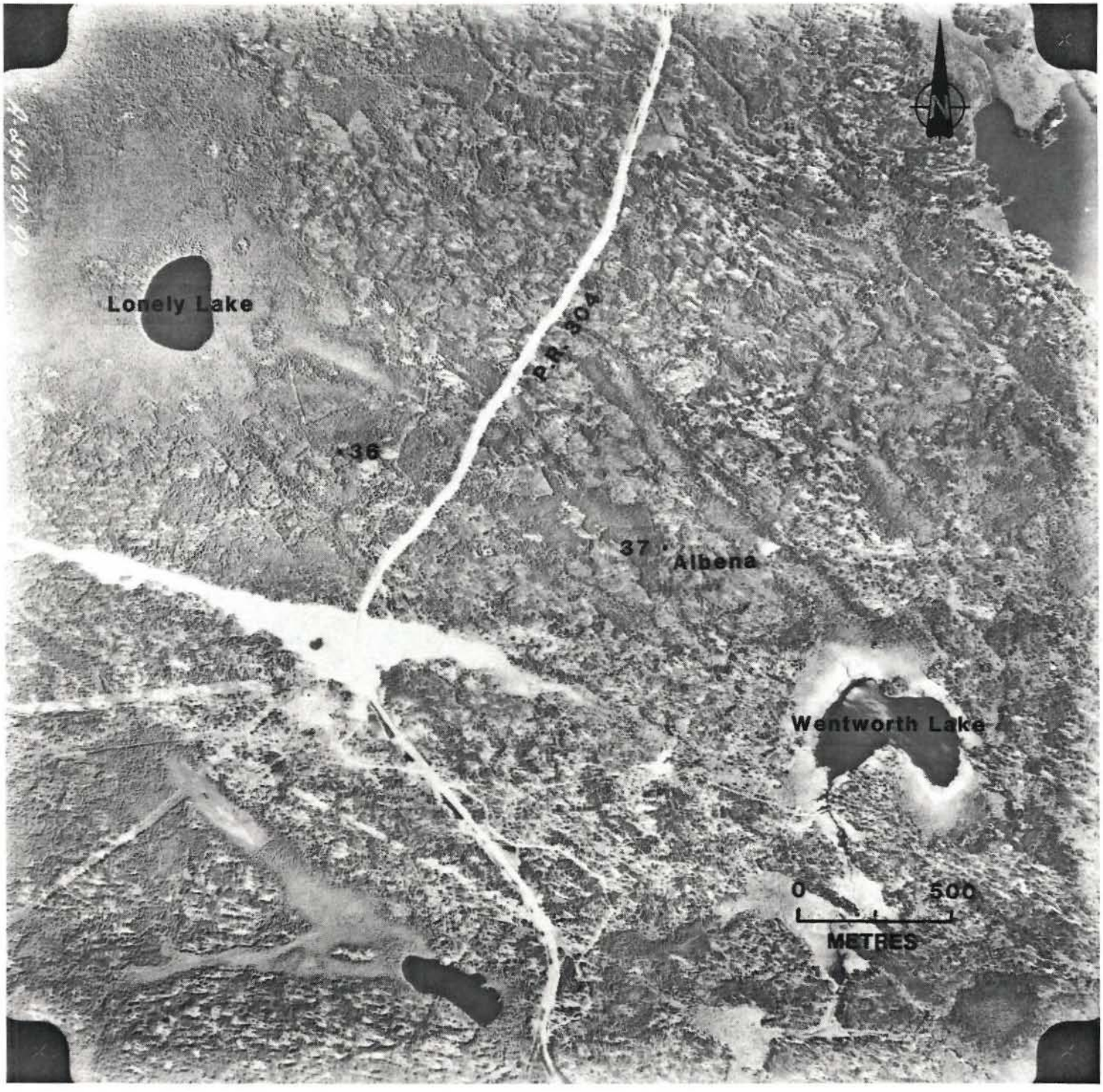

McLeod Lake
30
29
Halfway Lake
0
500
METRES
Path-168


N
31
Halfway Lake
0
500
METRES
Johnnie Lake
Oct 7/78 - 76

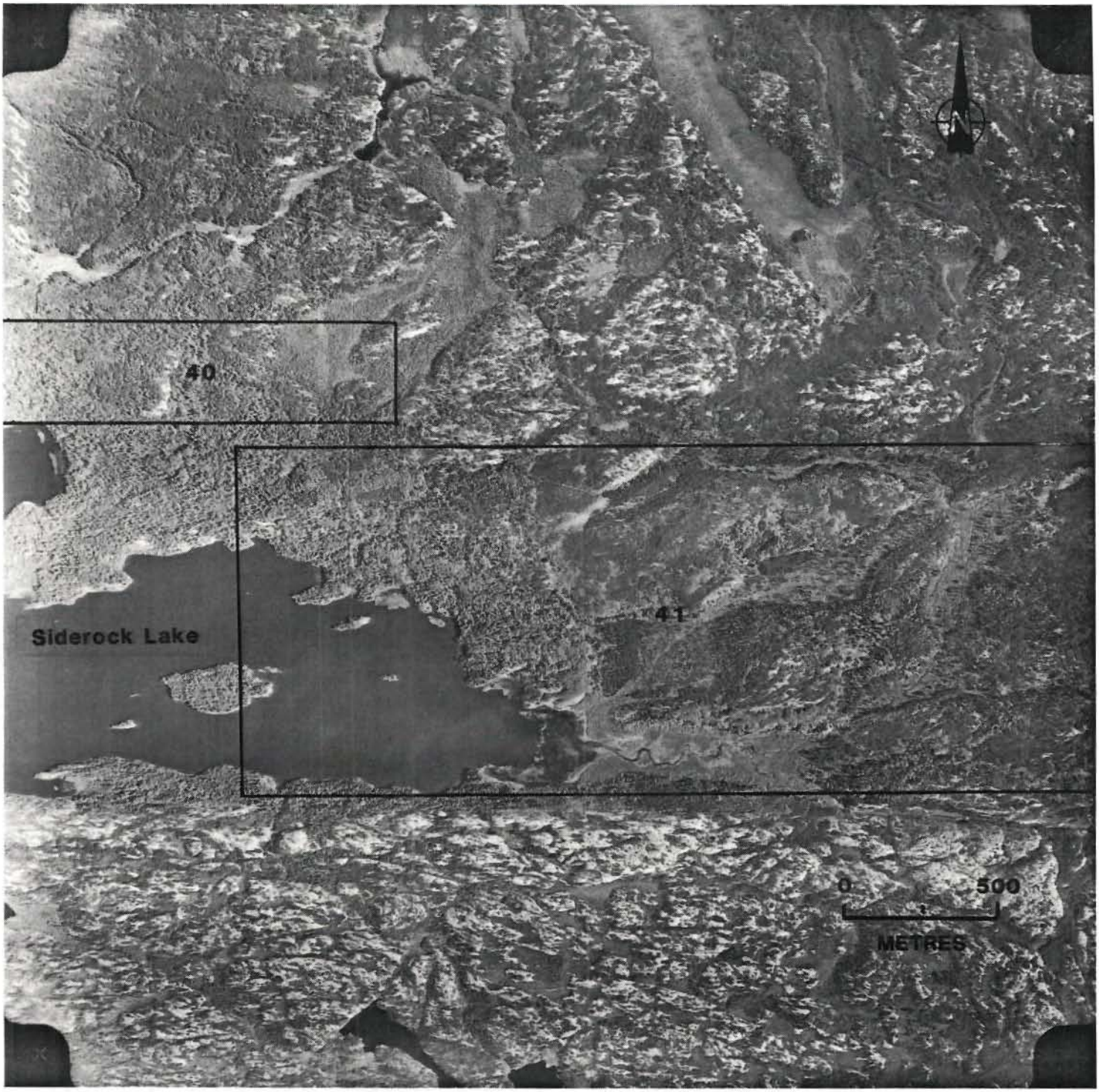

Long Lake
Manigotagan River
48
Eve
32
0
500
METRES

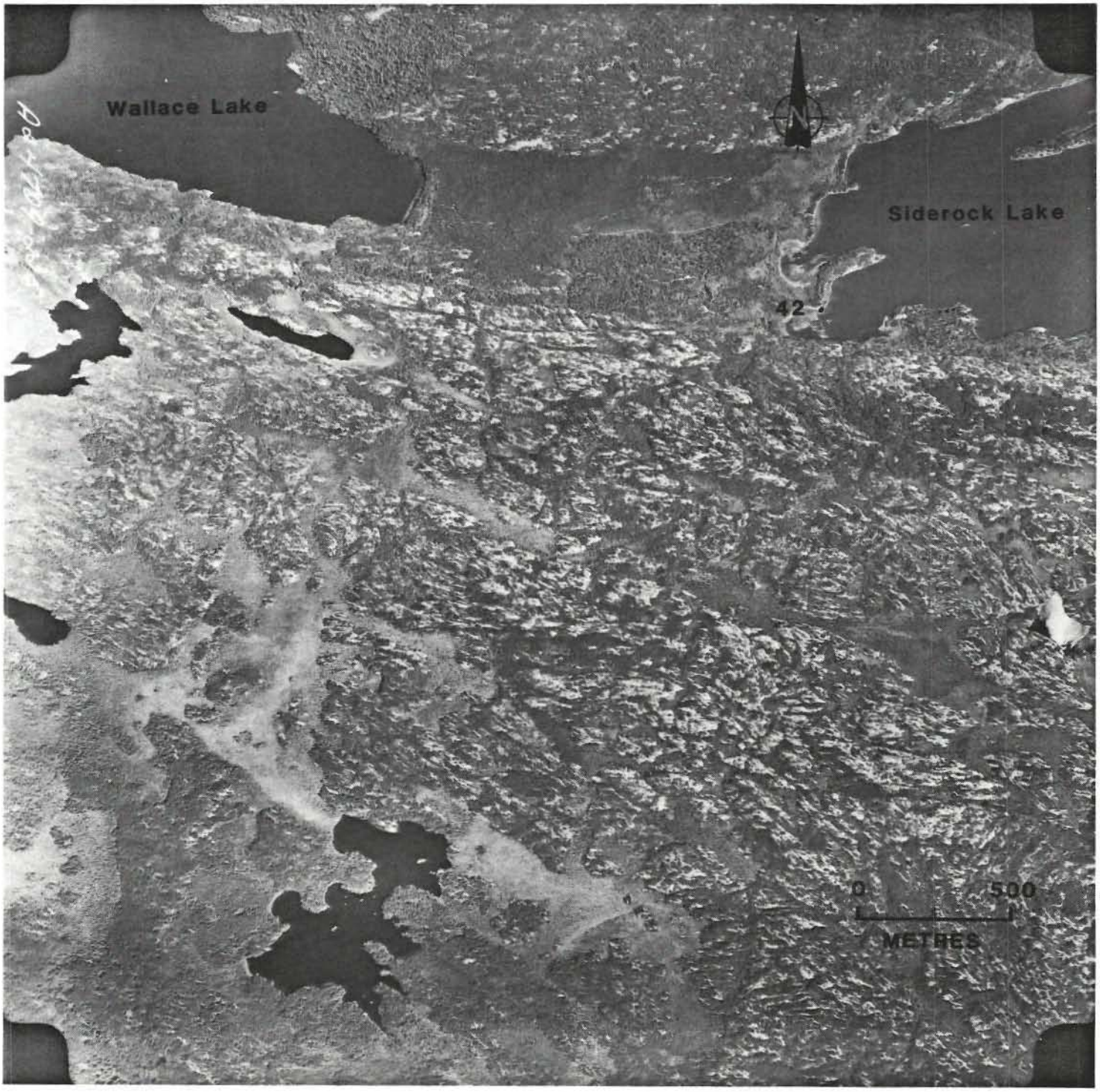

N
33
North Cliff
Cliff Lake
34
Cliff 1
Wentworth Lake
Stovel Lake
0
500
METRES

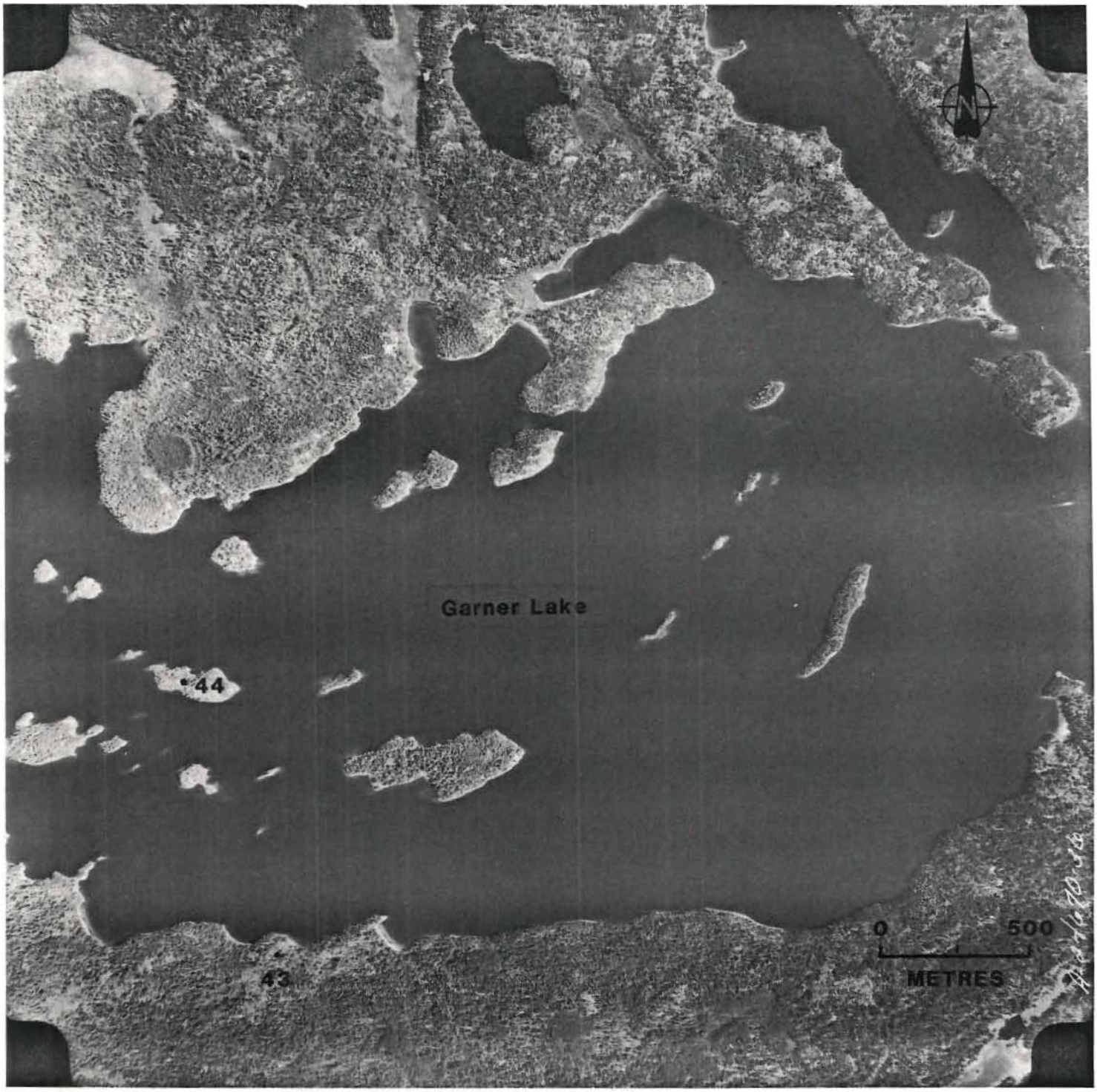

Beresford Lake
Beresford Lake access road
2
35
P.R. 314
0
500
METRES

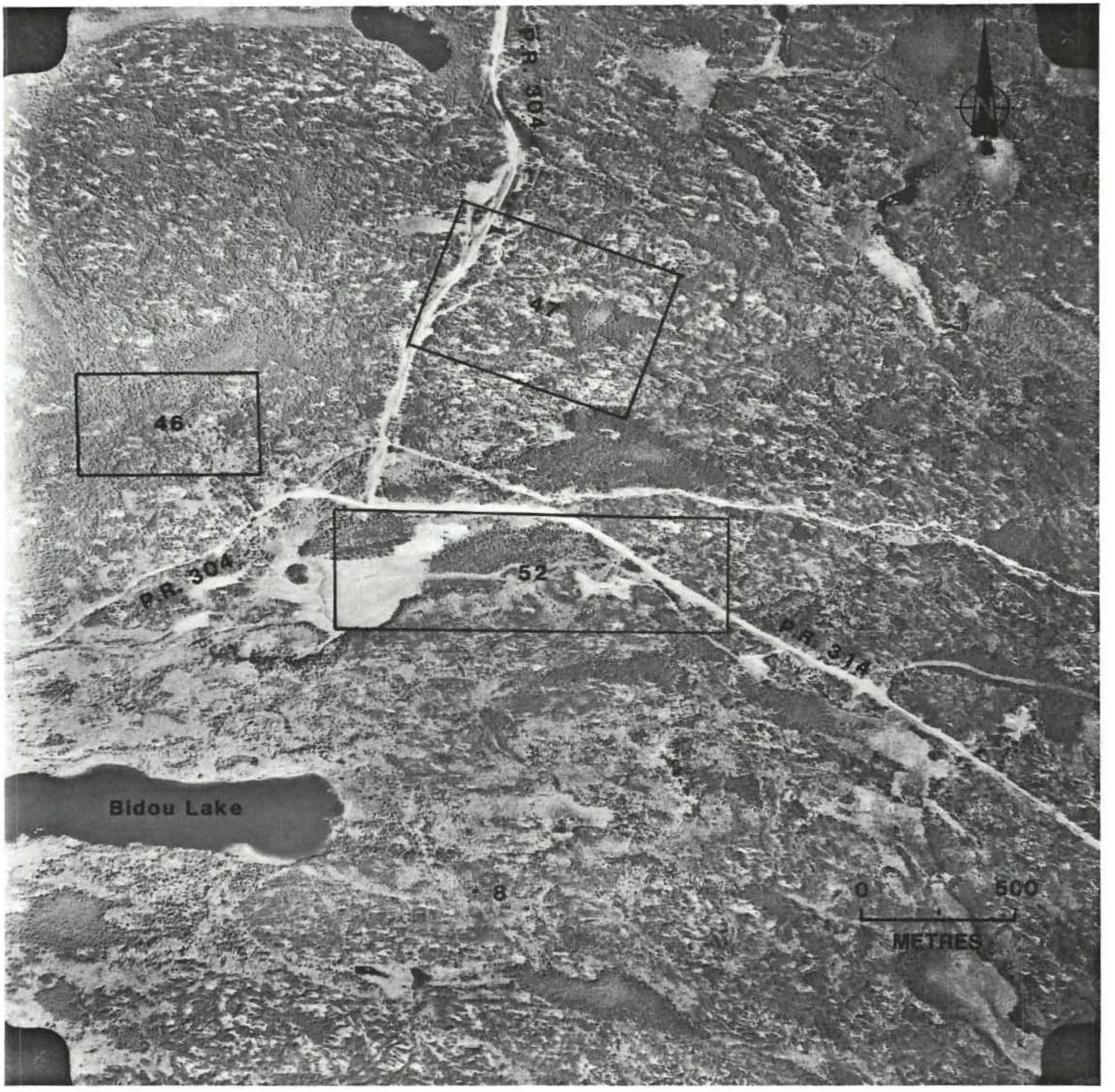

Lonely Lake
P.R. 304
36
37
Albena
Wentworth Lake
0
500
METRES

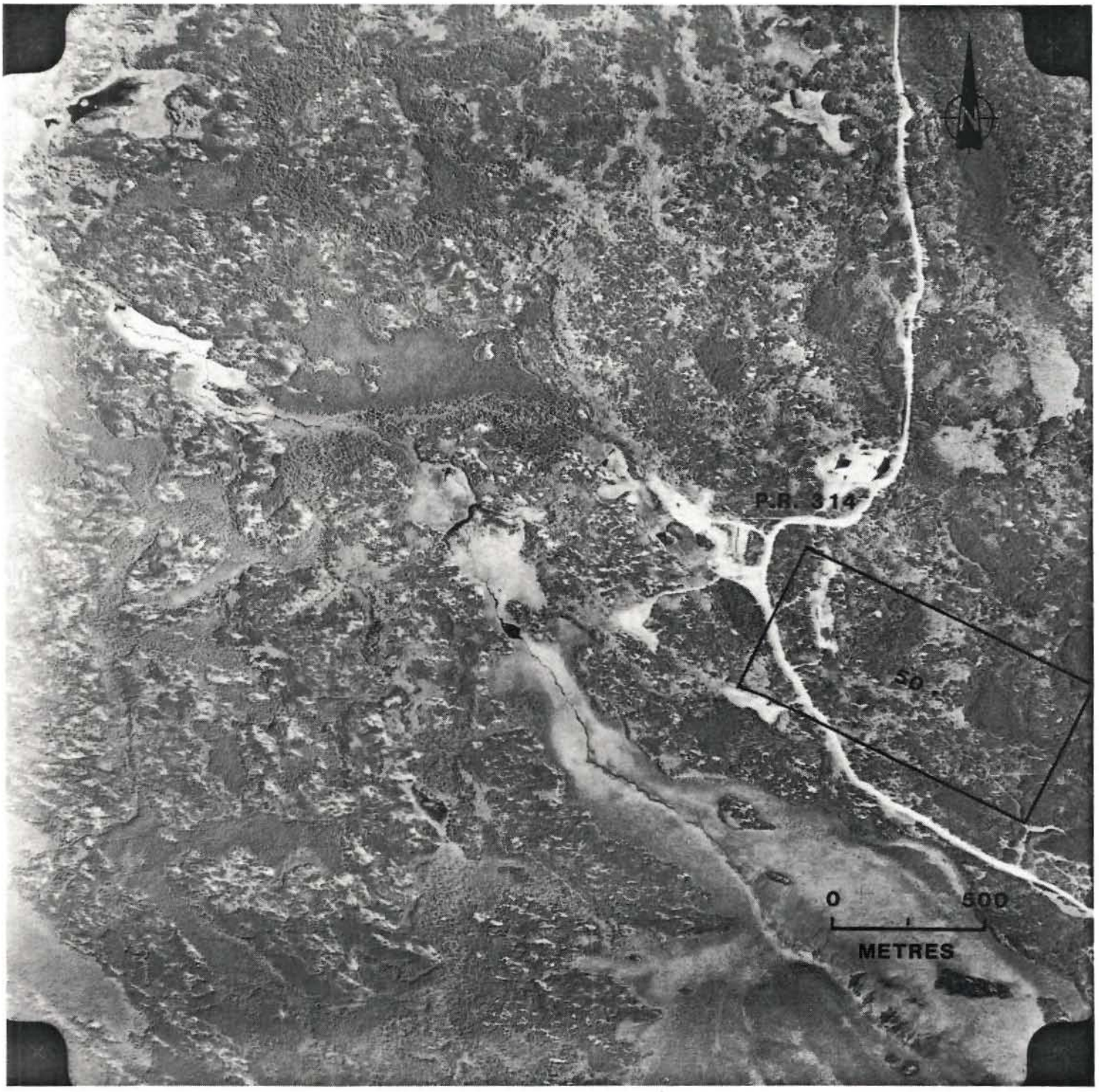

Stormy Lake
38
P.R. 314
45
Manigotagan River
0
500
METRES

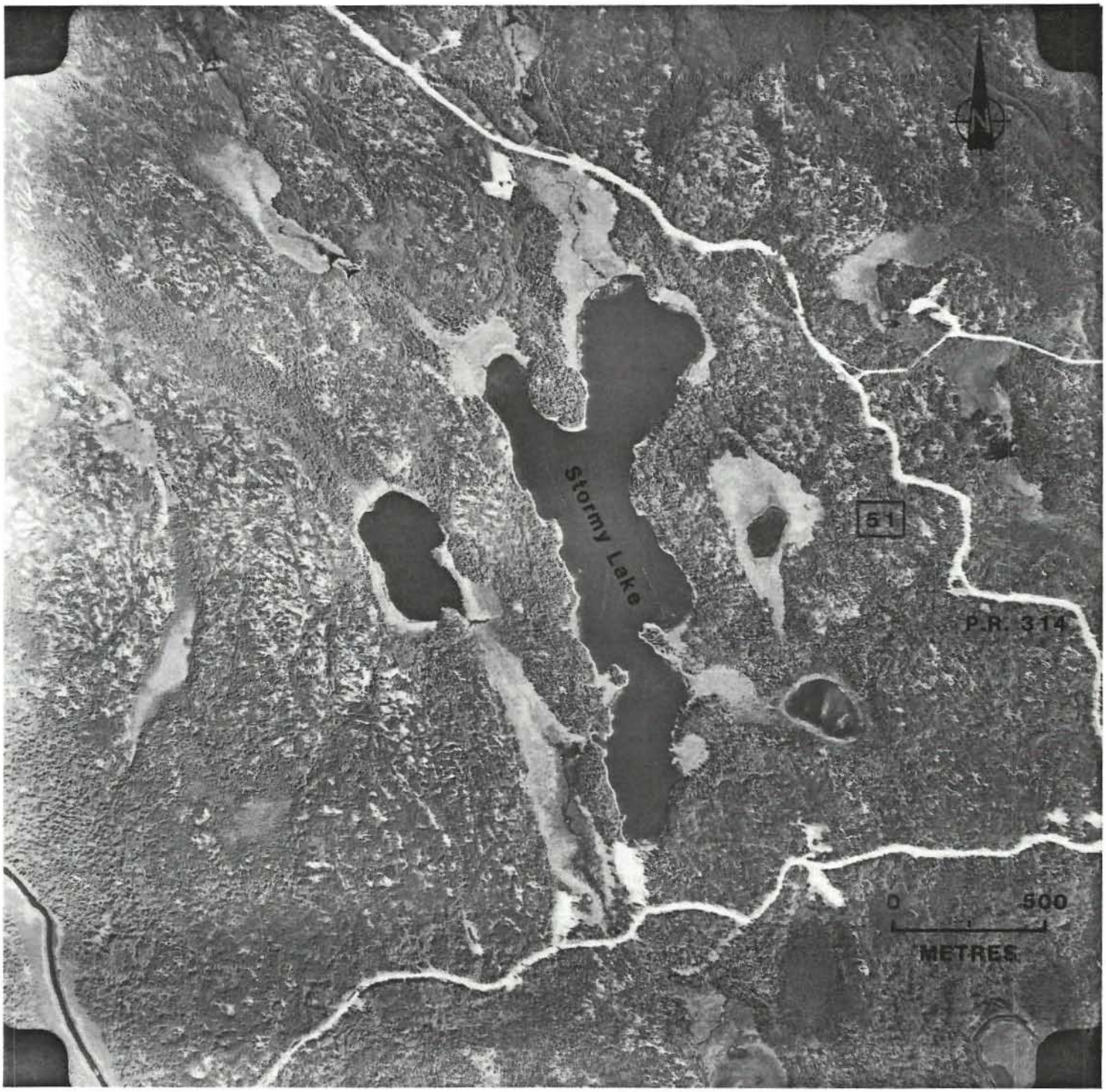

40
41
Siderock Lake
0
500
METRES

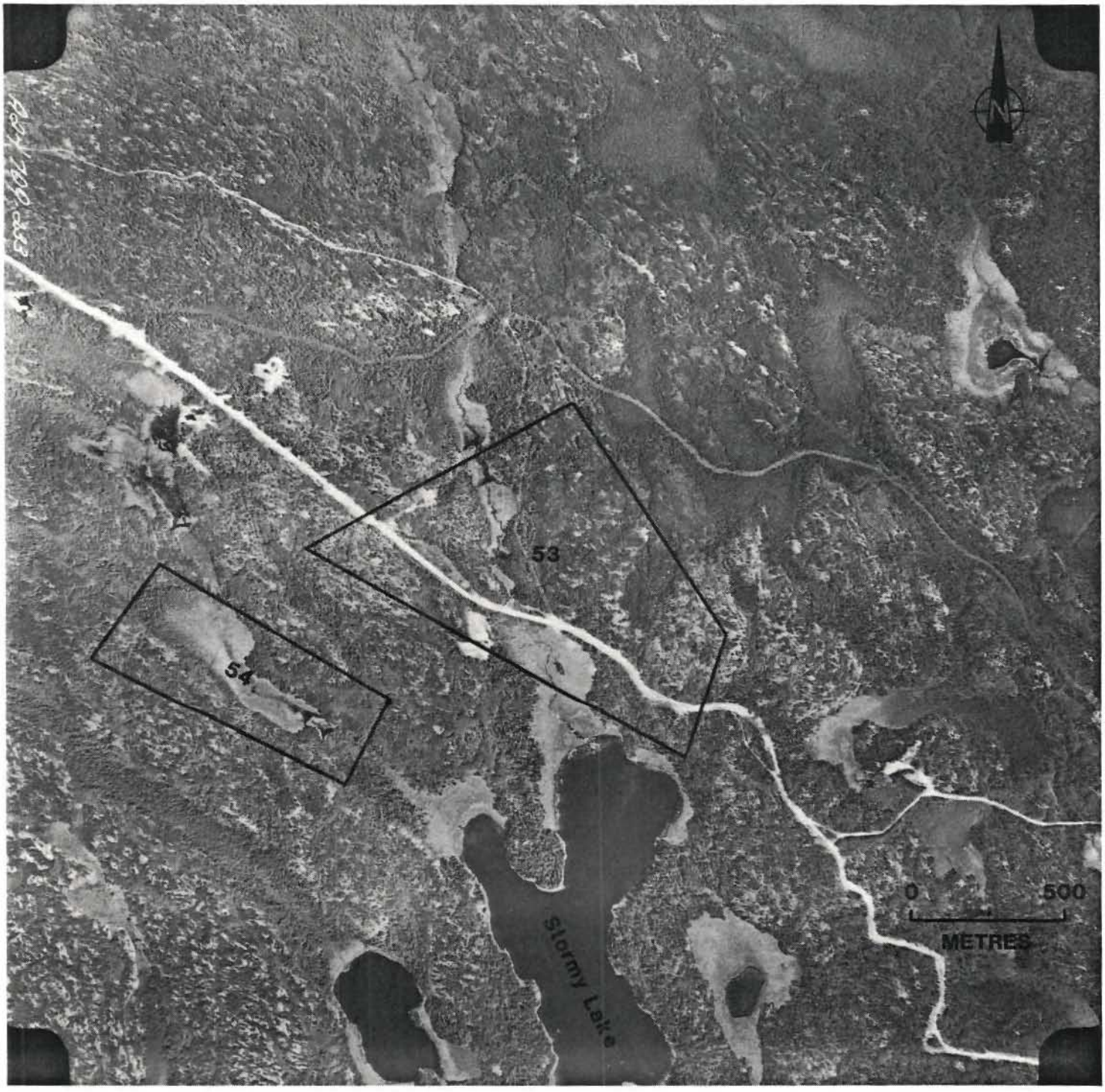

Wallace Lake
Siderock Lake
42
0
500
METRES


Garner Lake
44
43
N
0
500
METRES


P.R. 304
47
46
52
P.R. 304
P.R. 314
Bidou Lake
8
0
500
METRES

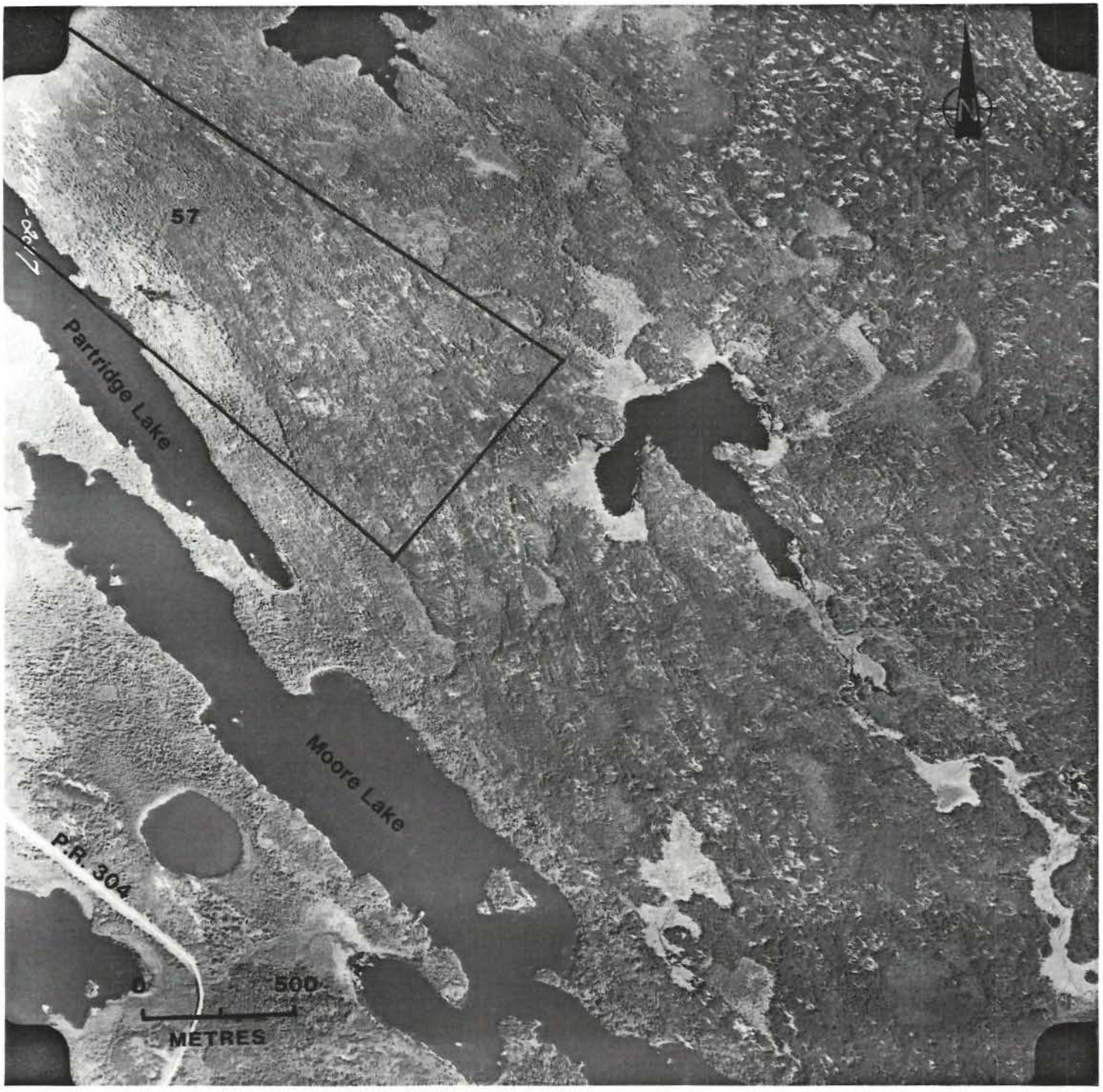

P.R. 314
50
0
500
METRES

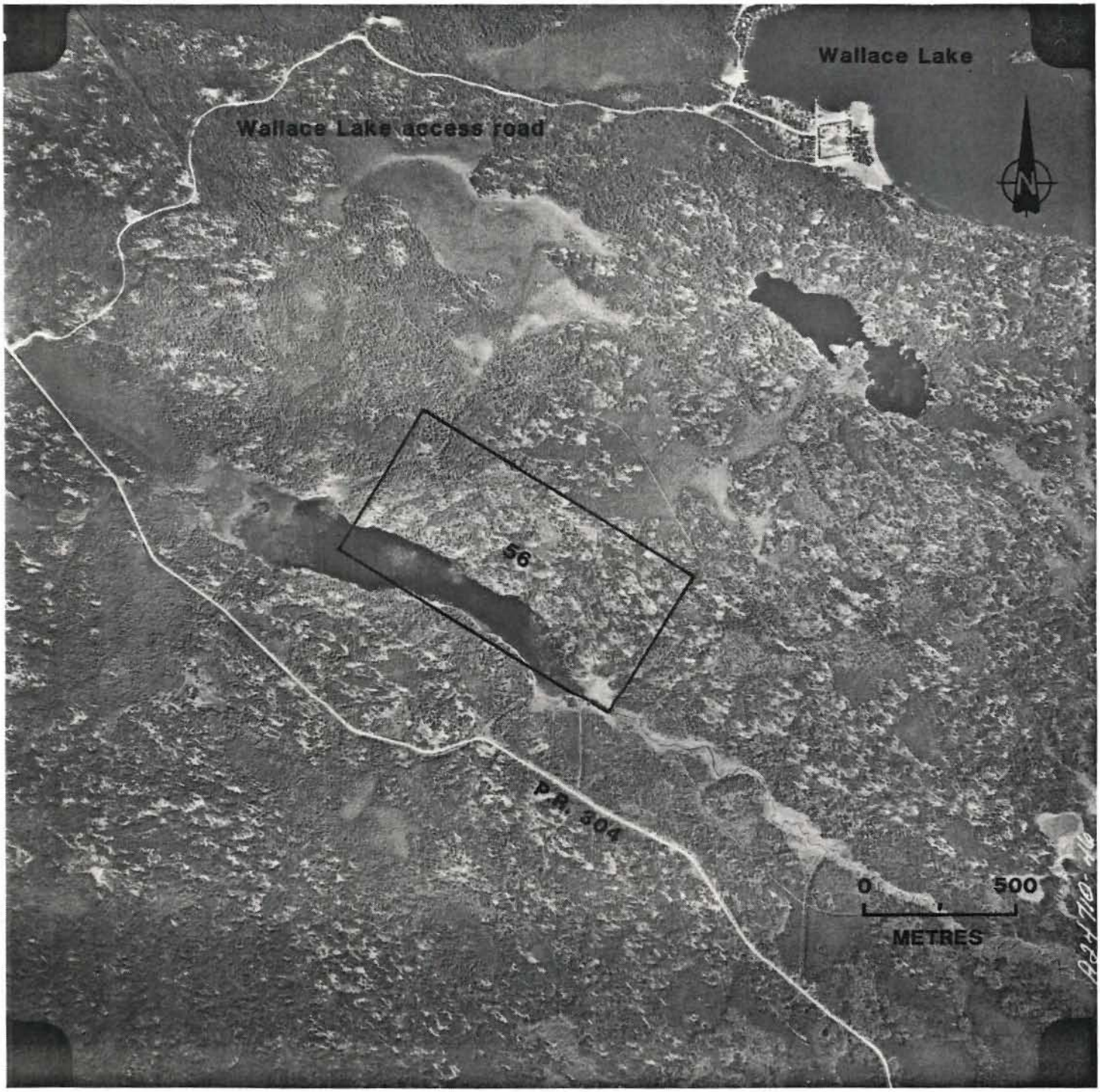

Stormy Lake
51
P.R. 314
0
500
METRES


53
54
Stormy Lake
0
500
METRES


N
P.R. 304
Bennet Lake
55
I-9
0
500
METRES


Mabel Lake
P.R. 304
Partridge Lake
Moore Lake
0
500
METRES


57
Partridge Lake
Moore Lake
P.R. 304
0
500
METRES


Wallace Lake
Wallace Lake access road
N
56
P.R. 304
0
500
METRES