NIPIGON GOLD RESOURCES LTD.

REPORT ON SUMMER 1990 EXPLORATION PROGRAM

ON THE

McKENZIE - GRAY PROPERTY

MINE CENTRE AREA

KENORA DISTRICT, ONTARIO

NTS 52C / 10

JULY 31, 1990
THUNDER BAY, ONTARIO

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

1.0 SUMMARY AND CONCLUSIONS

The Nipigon Gold - McKenzie Gray property, located 15 kms. by road west-southwest of Mine Centre, Ontario, is undergoing a comprehensive summer program supervised by David J. Gliddon Geological Services Inc.

The program included prospecting, geological mapping, geophysics, power stripping and channel sampling.

The geology of the property was restricted to observations made from the area covered during the 1990 mapping program. The property is underlain by a northeast-southwest trending sequence of dominately the Bad Vermilion felsic intrusion of the tonalite-trondhjemite suite containing intercolated, narrow lenticular xenoliths of mafic and felsic metavolcanic flows. At the northern portion of the surveyed area, the felsic intrusion contacts the Bad Vermilion Lake mafic intrusion which is a highly differentiated anorthosite to gabbro.

The Bad Vermilion felsic intrusion varies from a granodiorite with quartz-eye phenocrysts in the south, to a biotite-hornblende trondhjemite in the north, adjacent to the contact with the mafic intrusion. The felsic intrusion is medium to coarse grained, grey to white and composed of anhedral to subhedral grains of

plagioclase and quartz up to 0.5 cm. in size within a fine grained mafic matrix. The granodiorite to trondhjemite contains variable degrees of sausserite, chlorite, carbonate and sericite alteration, depending on the amount of local shearing.

The mafic and felsic metavolcanic xenoliths are essentially highly altered flows, fine to medium grained, light to dark green and also contain variable amounts of chlorite and carbonate alteration.

The Bad Vermilion Lake mafic intrusion is layered, and expressed by modal variations in mineralogy, chemical variation across strike and locally by rhythmic layering. The rock compositions range from melagabbro to anorthosite with plagioclase compositions in the range of 45-80% anorthite. The anorthosite is medium to coarse grained, grey-white and consists of anhedral to euhedral plagioclase phenocrysts up to 5cm. in size within a finer grained pyroxene matrix.

The geophysics outlined several VLF-EM conductors on the property, with the majority interpreted to represent conductive overburden and/or topographic features, but the remainder are interpreted as weak bedrock conductors of possible narrow shear zones. The magnetics confirm the general northeast-southwest trend of the underlying rocks, with the linear magnetic highs interpreted to represent the xenoliths of mafic metavolcanic flows.

The 1990 summer program outlined several narrow NE-SW trending shear zones and quartz veining parallel to these shears. No significant mineralization was noted within these veins, but the author believes that these veins, if mineralized, represent the ones with the greatest tonnage potential. Structurally, these veins are classified as first-order veins.

The previously known McKenzie-Gray vein, is the only vein found to date to contain gold-sulphide mineralization of economic concentrations. The vein is located within a highly sheared granodiorite in a NW trending fault/shear zone cross-cutting the foliation. The vein is bounded by fractures and is boudinaged and folded vertically and horizontally, averages 1 metre wide and is exposed for 100 metres along strike. The quartz vein is reddish-grey with sericitic-filled shear planes within the vein and contains minor carbonate and tourmaline. Mineralization consists of free gold and gold within sulphides, the sulphides are black, brown and green sphalerite, chalcopyrite, galena and pyrite. The mineralization occurs along the total length of the vein in anomalous and high grade sections.

The McKenzie-Gray vein is interpreted from geology and geophysics to be a second-order quartz vein within a sinestral (left-lateral) progressive ductile to brittle shear zone and the vein is a crack and seal-type vein.

The author believes that the potential still exists to locate similar veins as the McKenzie-Gray on the property to the west along the heavily overburden covered area, to as far west as Obashinsing Lake and south of the baseline.

The type of exploration program conducted during the summer of 1990 of power stripping, detailed mapping and channel sampling should be continued, to fully evaluate the mineral potential of the property.

2.0 INTRODUCTION

David J. Gliddon Geological Services Inc. was contracted by Nipigon Gold Resources Ltd. to undertake a supervisory role of a prospecting, geological mapping, trenching, channel sampling and geophysical survey program on their McKenzie-Gray property.

Prior to the 1990 program, Nipigon Gold Resources had conducted an extensive program of surface stripping and trenching on the McKenzie Gray - East Veins and surface stripping on the Big John Vein (Bernatchez,1989). During the 1990 program other projects consisting of an airborne EM-Mag survey and metallurgical studies of the McKenzie-Gray vein were conducted.

The prospecting, geological mapping and geophysical surveys were initiated to delineate the known mineralized zones, to identify new

zones and to produce an overall geological and geophysical picture.

These surveys to be followed up by power stripping, detailed mapping and channel sampling of mineralized zones outlined.

Proposed work for the remainder of the 1990 field season includes a continuation of the power stripping, detailed mapping and channel sampling of mineralized zones outlined to date and areas oulined in Phase I. An evaluation of all the 1990 data will be conducted before a diamond drill program phase is proposed for the 1991 field season.

3.0 PROPERTY

The property consists of (32) contiguous claims (1280 acres) in two groups, the McKenzie Gray and West Rock Groups.

The claims are located in the Kenora Mining Division and are registered in the Kenora Mining Recorder's office.

The claims are in good standing from the recording dates and are numbered as follows:

Nipigon Gold Resources Ltd.

	Claim No.	No. of Claims
McKenzie Gray Group	K475272 - K475277	6
West Rock Group	K1079415 - K1079417	3

K1079419 - K1079424		6
K1082231		1
K1082251 - K1082253		3
K1085503 - K1085507		5
K1092740 - K1092747		8
	TOTAL	32

The relationship of the claim block and claims are illustrated in FIGURE 1.

4.0 LOCATION AND ACCESS

The Nipigon Gold - McKenzie Gray property is located at latitude 48 41' and longitude 93 41', 15 kms. west-southwest of Mine Centre on NTS sheet 52C/10 at the south outlet of Bad Vermilion Lake through Bad Vermilion Creek and Obashinsing Lake, located 2 kms. west of Shoal Lake. Mine Centre is a small community located on Highway 11, 70 kms. east of the towns of Fort Frances, Ontario and International Falls, Minnesota and 200 kms. west of Thunder Bay, Ontario. The Seine River Indian Reserve No.23B is located near the southwest corner of the property along the north shore of Grassy Lake and west of Mudge's Camp which is located at the outlet of the Bad Vermilion Creek into Grassy Lake (Figures 1 and 2).

The only Road access to the property is from Highway 11, via the Shoal Lake road, one kilometre east of Mine Centre. The Shoal Lake road underwent an upgrading during the 1990 season through a grant provided by NORTC to Nipigon Gold Resources from the highway to the property. The road traverses south-southwest between Bad Vermilion

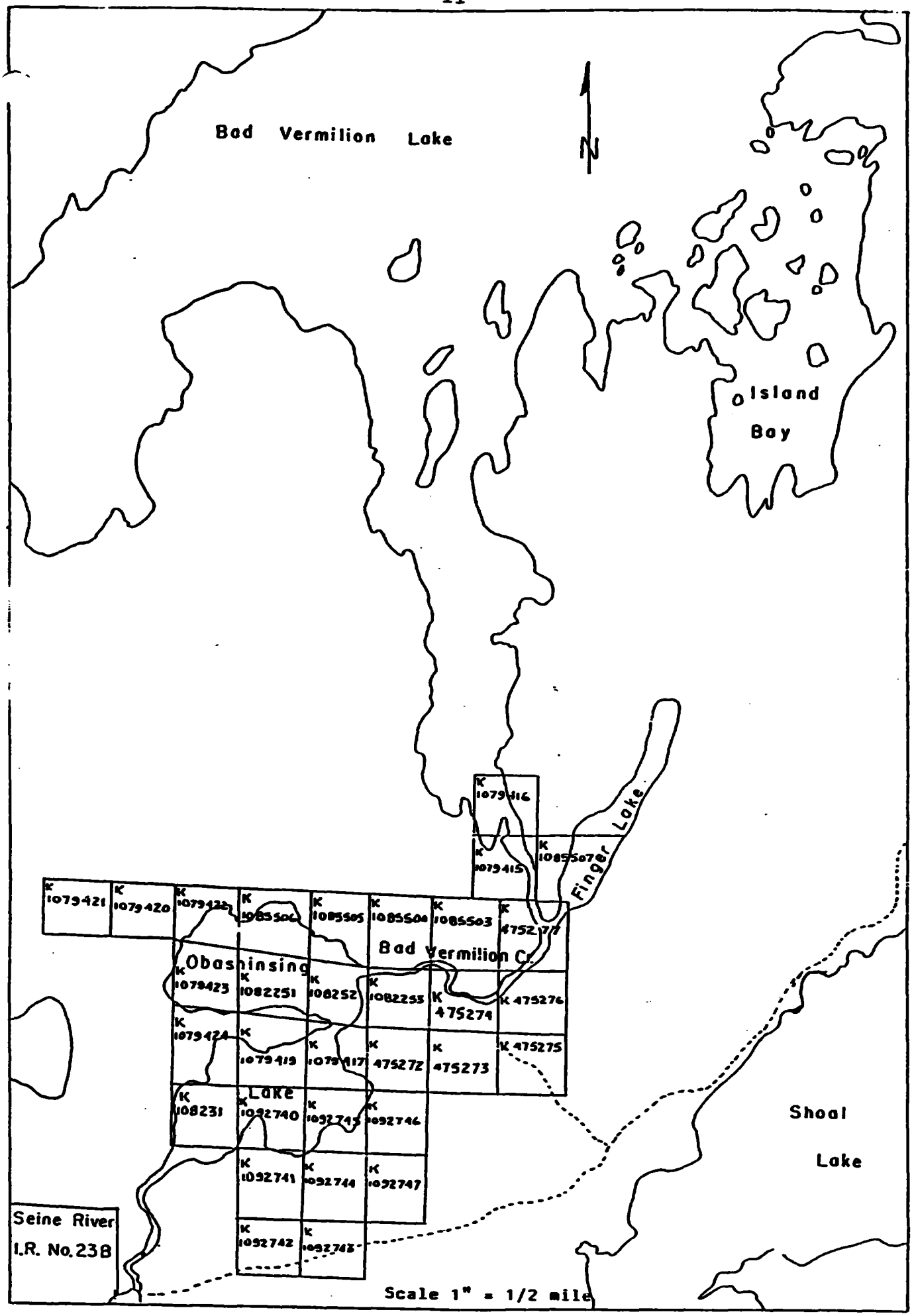
Bad Vermilion Lake
N
Island
Bay
Finger Lake
Bad Vermilion Cr.
Obashinsing
Lake
Shoal
Lake
Seine River
I.R. No. 23B
Scale 1" = 1/2 mile

FIGURE 1

and Shoal Lakes, following the west shore of Shoal Lake to Pow Ground Point and turns west-northwestward to the property, to the McKenzie Gray showing located approximately 300 metres south of Bad Vermilion Creek. The property can also be reached by boat from a public boat landing in Mine Centre on the northwest shore of Bad Vermilion Lake, 8.5 kms. due north of the inlet to Bad Vermilion Creek.

5.0 TOPOGRAPHY AND VEGETATION

Releif over the property is low, with outcrop exposures accounting for most topographic highs. Topographically, low areas are often lakes or swampy areas between lakes. Northeast trending lineaments were noted on the property as narrow gorges, and Finger Lake which is a long narrow lake to the NE of the property. These lineaments may represent faults and/or shear zone systems.

The claims are mostly covered with spruce and balsam, with birch, poplar and thick hazel underbrush covering the topographic highs. Intervening marshy areas are associated with muskeg, cedar and alders.

6.0 CLIMATE

In the area of the property the climate is of the continental-type, characterized by hot summers and cold, dry winters. Precipitation


Hudson Bay
N
Red Lake
Lake St. Joseph
Albany River
Lake of the Woods
Kenora
L. Nipigon
McKenzie-Gray Property
Thunder Bay
River
Hemlo
Timmins
Lake Superior
Duluth
Cobalt
Ottawa
River
Sault Ste. Marie
Sudbury
Lake Huron
Lake Michigan
Toronto
L. Ontario
Lake Erie
0 100 200 miles
0 100 200 300 km
SCALE 1" in. - 125 miles

FIGURE 2

is variable throughout the summer months, while snow accumulations during the winter months measures 1-2 metres in the bush and remains until the end of April.

7.0 POWER

The nearest power source is the Ontario Hydro Power Commission transmission line located along Highway 11, 15 kms. north of the property. A spur-transmission line from Highway 11 to the property would be uneconomic, therefore any small-scale mining operation on the property would have to be supplied by diesel generators.

8.0 WATER

The property consists of approximately 15% water, most of which is Obashinsing Lake. The Bad Vermilion Creek flows through the property into Obashinsing Lake from Bad Vermilion Lake and is located to within 300 metres of the Mckenzie-Gray Vein. Several other smaller creeks and streams, some of which are intermittent, flow into Obashinsing Lake and Bad Vermilion Creek.

The Bad Vermilion Creek is a sufficient water source to support all phases of exploration and a small-scale mining operation.

9.0 ANCILLARY SERVICES

Most supplies and services can be obtained from the towns of Fort Frances, Ontario and International Falls, Minnesota located 85 kms. west by road from the McKenzie-Gray property. However, any drilling or mining operation would have to be supported from an outside location.

The town's of Fort Frances and International Falls have a combined population of 30,000 and are situated on Highway 11 approximately a three hour drive west of Thunder Bay. The Fort Frances airport has Dash 8 service to Thunder Bay and Winnipeg.

The Canadian National Railway has a line located parallel to Highway 11, 15 kms. north of the property.

10.0 PROPERTY HISTORY

The McKenzie-Gray vein is the main showing on the property. It is reported to have been discovered in 1926 (Schnieders and Dudka, 1985) by Bankfield Consolidated Mines Ltd. Subsequent trenching, sampling and diamond drilling by Bankfield delineated the McKenzie-Gray gold-bearing vein.

Briefly documented visits were made to the property by Wright-Hargraves, Sylvanite Gold Mines Ltd., McIntyre Gold Mines Ltd.,

U.S. Smelter and Ventures Ltd. from 1938-1946. Three reported the following assays from the Bankfield surface sampling and diamond drill programs.

McIntyre: 16.8 g Au/t across 0.9 metres and 76.2 metres long (0.49 oz Au/t across 2.9 feet and 250 feet long)

U.S. Smelter: 15.1 g Au/t across 1.2 metres and 53.4 metres long (0.44 oz Au/t across 4.0 feet and 175 feet long)

Ventures Ltd.: 9.3 g Au/t across 1.2 metres and 91.5 metres long (0.27 oz Au/t across 4.0 feet and 300 feet long)

Steep Rock Mines Ltd. visited the area in 1966-67 to survey the area along the Finger Lake fault zone. Weak EM-VLF conductors were detected in this area, and copper, molybdenum and pyrite mineralization were noted in the Island Bay and Finger Lake area. The property went through a period of inactivity until 1979 when Corp. Oil and Gas Ltd. took an option on the McKenzie-Gray property from S. Lakatos and K. McTavish. Corp. Oil and Gas conducted a program of stripping, trenching and diamond drilling on the McKenzie-Gray vein. Their best drill results were 1.4 g Au/t over 2.1 metres and 5.1 g Au/t over 0.6 metres (0.04 oz Au/t over 7 feet and 0.15 oz Au/t over 2 feet). These holes tested the vein down to the 30 and 70 metre levels. The option was dropped in January 1981.

The property was optioned again, to Sherritt Gordon Mines Ltd. and a small program of line cutting (3.5 km.), soil and humus geochem

was conducted on the McKenzie-Gray vein area from 1982-83. This survey outlines several humus gold and soil lead-zinc anomalies over the surveyed area. The closure of Sherritt Gordon's exploration office in Kenora terminated the program and the option on the property before it could be fully evaluated.

Steep Rock Resources Inc. visited the property in 1983 and an option was taken with S. Lakatos and K. McTavish. A work program of line cutting (21.5 kms.), magnetometer and induced polarization surveys was carried out during November and December of 1983. A drilling program was being proposed to test the I.P. and magnetic anomalies on the property, but a closure of Steep Rock's exploration office in Atikokan terminated the option on the property in early 1984. The Steep Rock program did, however, delineate several anomalies located 300-400 metres west of the McKenzie-Gray vein.

In November of 1984, a 25-27 ton bulk sample was taken by the Mine Centre Joint Venture Group, from a high grade zinc portion of the McKenzie-Gray vein. It was processed through a local mill. Available data indicates that the mill feed was graded at 7.2 g Au/t, 112.1 g Ag/t, 10-18% Zn and 0.11% Pb (0.21 oz Au/t, 3.27 oz Ag/t). No results are available from the mill testing.

The property was subsequently optioned by Corporation Falconbridge Copper (C.F.C.) in 1985. A program of mechanical stripping and

diamond drilling was carried out by C.F.C. from 1985 to 1986 around the immediate area of the McKenzie-Gray vein. The drilling intersected the McKenzie-Gray vein in several drill holes. Good values were obtained in holes L-5, L-6 and L-10. Most of the holes intersected two different coloured quartz veins; a wide white-grey weakly mineralized with pyrite and very minor galena and sphalerite quarz vein; and a narrow reddish-grey and more mineralized quartz vein. The latter appears to cross-cut the white-grey vein. Both veins, as determined from cross-sections of C.F.C. drill information to have a dip to the southwest. The white-grey vein dips approximately 70-75 degrees to the southwest, whereas the reddish-grey vein dips 80-85 degrees to the southwest. The reddish-grey vein corresponds with the McKenzie-Gray vein on surface whereas the white-grey vein corresponds with the East vein located 2-3 metres east of the McKenzie-Gray vein on surface. It appears from C.F.C. drill results that a second vein system, similar to the McKenzie-Gray vein was intersected in Hole L-10 and is located northeast of the McKenzie-Gray vein. The property was subsequently dropped by C.F.C. in July of 1987.

In 1988-89, Nipigon Gold Resources optioned the McKenzie-Gray group of six (6) claims and carried out an extensive program of surface stripping and trenching over the McKenzie-Gray and East veins. Sampling by Nipigon Gold Resources on both veins showed consistent moderate to high grade gold values within the McKenzie vein on surface, but weak and sometimes erratic high values within the East

vein. Both, however, were mineralized with results similar to those obtained by Bankfeild Consolidated Mines Ltd.

This completes the exploration history carried out on the McKenzie-Gray property to date.(Bernatchez, 1989)

11.0 SUMMER PROGRAM

The exploration program commenced on April 28th, 1990 and is still ongoing at the time the author completed the enclosed report.

The program included the following:

(1) Re-establishment of the existing baseline and survey lines cut by Steep Rock Resources Inc. in 1983. The survey lines were cut at 50 metre intervals and re-chained at 25 metre station intervals, totalling 31.5 kms.

(2) Prospecting and geological mapping program at a scale of 1:1000 over re-established survey lines.

(3) Geophysical surveys consisting of VLF-EM and Proton Magnetometer were conducted over re-established survey lines, with readings taken at 12.5 metre intervals.

(4) Mechanical stripping, trenching and wajaxing on the known and new mineralized zones outlined.

(5) Establishment of detail mini-grids consisting of 2*2 metre blocks over the McKenzie-Gray and Jolly Rodger Veins.

(6) Detail geological mapping of the McKenzie Gray- East and Jolly Rodger Veins at a scale of 1:100.

(7) Detail channel sampling of the McKenzie-Gray and East Veins.

12.0 REGIONAL GEOLOGY

The rocks in the Mine Centre area occur within the Archean Superior Province in a fault-bounded wedge between two subprovinces, the Wabigoon granite-greenstone terrain to the north and the Quetico metasedimentary terrain to the south. The Quetico and Seine River dextral wrench faults form two first-order structures in the area and are defined as ductile shear zones which display distinctive stratigraphic, structural and metamorphic terrain (Figure 3).

All major rock types of the Archean are represented in the area. They include mafic and felsic metavolcanics, sedimentary wackes and mudstones, conglomerates and arenites, layered gabbroic-anorthositic intrusions, tonalitic and grano-dioritic felsic intrusions. The wedge of Archean rocks contained between the Quetico and Seine River faults is structurally discordant from both subprovinces but because of their gross lithological similarities they form part of the Wabigoon subprovince.

The rocks north of the Quetico fault form part of the Irene-Eltrut Lakes and Rainy Lake granite complexes. These complexes consist of gneissic domes and granitoid intrusions with minor supracrustal

metavolcanic and metasedimentary rocks along the margins of the gneissic domes.

The rocks south of the Seine River fault consist of metasedimentary rocks displaying low to high grade metamorphism. These sedimentary rocks dip steeply 70-90 degrees south and display three discrete cleavages: 1) an east-west subparallel to the bedding 2) a moderate angle to bedding 3) a late set of crenulation and kink bands striking northwest. The sedimentary bands consist of pelitic rocks increasing in metamorphic grade southward from the Seine River fault from a chlorite-sericite, chlorite-biotite greenschist facies assemblage to biotite-cordierite-staurolite-garnet-sillimanite amphibolite, biotite-garnet-andalusite-staurolite and biotite-garnet-sillimanite amphibolite facies assemblages (Poulsen, 1984).

Supercrustal metavolcanic and metasedimentary rocks now occupy the area between the two major first-order structures, the Quetico fault to the north and the Seine River fault to the south.

The metavolcanic lithologies consist of basaltic flows, pyroclastics and epiclastic rocks of intermediate to felsic composition. These rocks occupy the northwest, north and east margin of the wedged block and to a minor extent, the south margin. The metasedimentary rocks within this wedged block located mainly on the eastern part of the wedge consists of conglomerates, wacke, mudstone and iron formation in contact with the volcanics

and form part of the Quetico metasediments.

Numerous stocks have intruded the wedge-shaped block between the Quetico and Seine River faults.

The two major stocks are the Ottertail stock and the Bad Vermilion Lake mafic intrusion which are similar in age. These intrusions are about 100 million years younger than the granitiod masses north of the Quetico fault, the Irene-Eltrut Lakes and Rainy Lake Batholithic Complexes (Poulsen, 1984).

The Bad Vermilion Lake mafic intrusion takes the shape of a steeply dipping, layered gabbroic sill. The layering is expressed by modal variations in mineralogy, chemical variations across strike and locally by rhythmic mineral layering. Rock composition ranges from metagabbro to anorthosite with plagioclase compositions in the range of 45% to 80% anorthite. Numerous small sills and dikes of this rock cut the metavolcanic and metasedimentary sequence.

Granitoid rocks of trondhjemitic and tonalitic composition have intruded the contact zone in the form of sills along the volcanic and gabbroic rock contact. The Mud Lake trondhjemite intrudes along the northwest contact of the Bad Vermilion gabbroic complex and the Bad Vermilion tonalite has intruded along the southeast contact of the Bad Vermilion Lake gabbroic complex. The sills are conformable with their host and rarely intrude the country rocks.

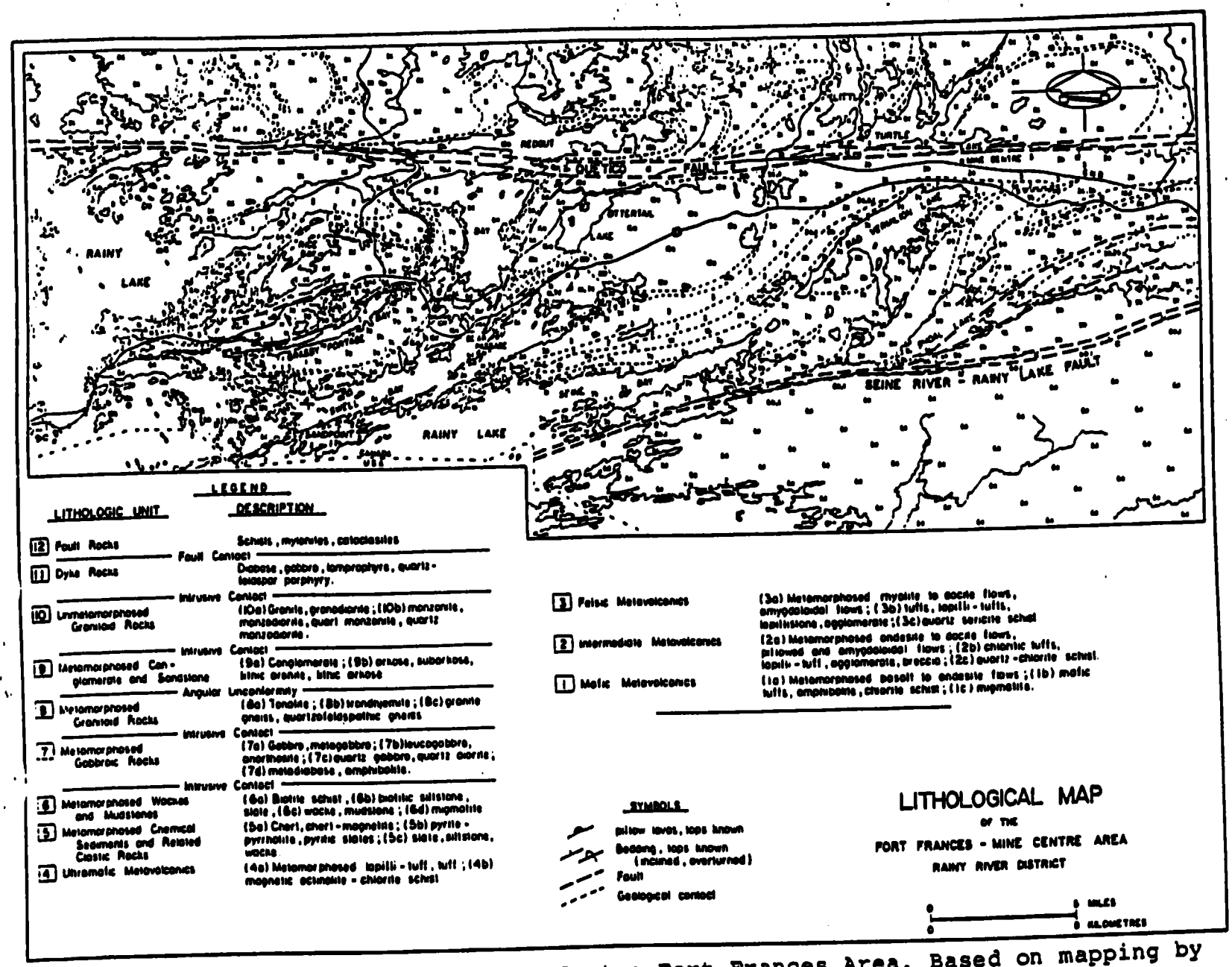

Fig. 3. Lithological Map of the Mine Centre-Fort Frances Area. Based on mapping by Blackburn (1973), Harris (1971), Wood et al. (1980), Poulsen (1980b, 1981).

The trondhjemite is medium-grained, while the tonalite is coarse-grained. Intense foliation has developed at their contacts with their hosts and have developed major shear zones such as the Finger Lake shear zone (Poulsen, 1984).

13.0 REGIONAL STRUCTURE

The two major structures in the area are the Quetico and the Seine River-Rainy Lake fault zones. The Quetico fault is up to one kilometre wide and contains schists, mylonites, cataclastites and pseudotrachylite. The primary constituents of these deformed rocks are plutonic, metavolcanic and metasedimentary rocks of Archean age. The rocks in the Seine River fault zone are similarily deformed but from different lithologies of sedimentary origin thus forming schists, phyllites and phyllonites. Smaller secondary shear zones have developed throughout the area and are composed of local rock types (Figure 4).

The attitude of minor fold axes and cleavage are clearly controlled by proximity to the Quetico and Seine River faults. This sigmoidal pattern of cleavage orientation suggests that these faults involve a zone of ductile deformation in which rotation of early-formed structures has taken place. Deflection of marker units indicates right-hand components of displacement for both faults so that the intervening terrain can be considered a dextral wrench zone. The orientations and senses of mesoscopic ductile shear zones across

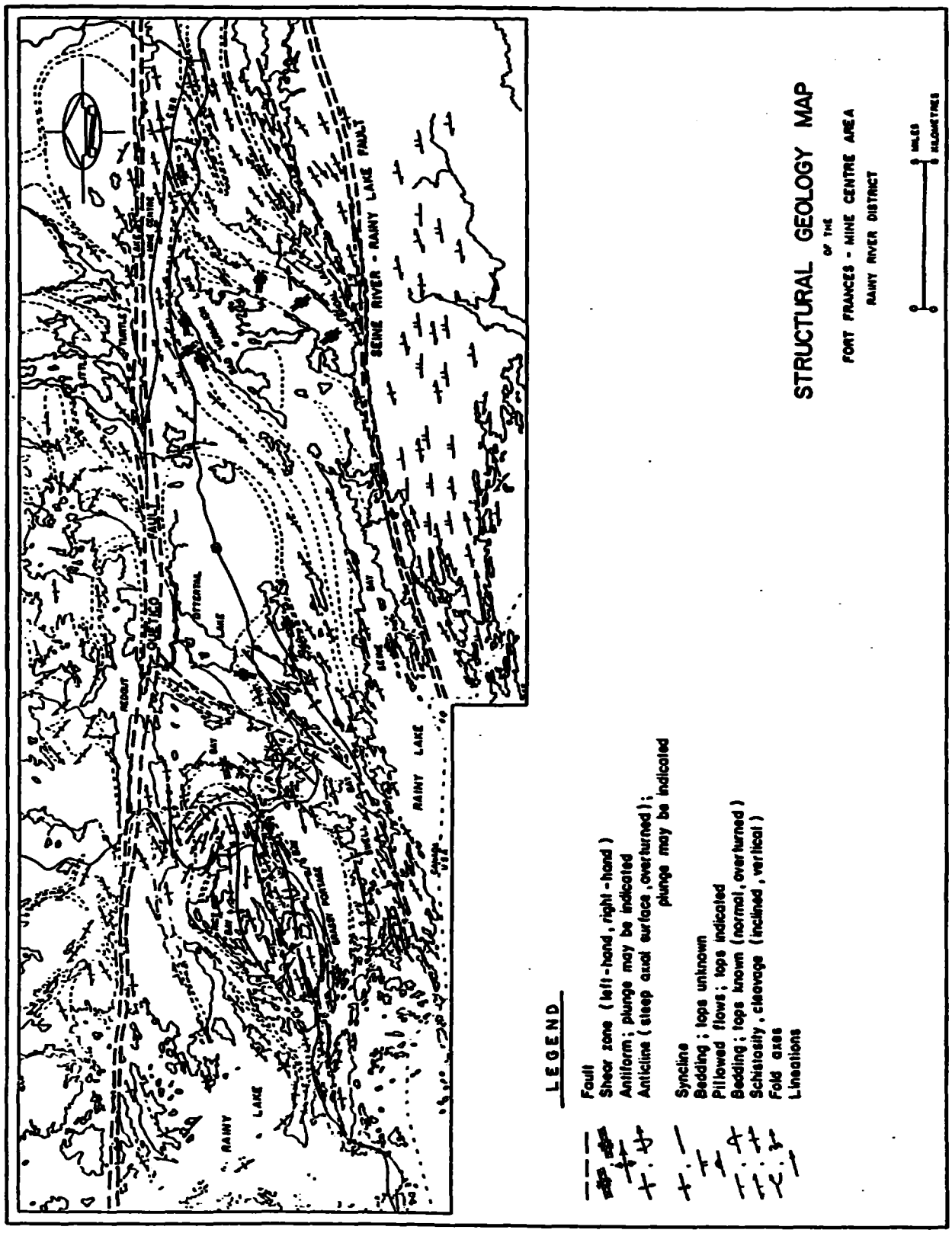

Fig. 4. Summary structural geology map, Mine Centre-Fort Frances area.

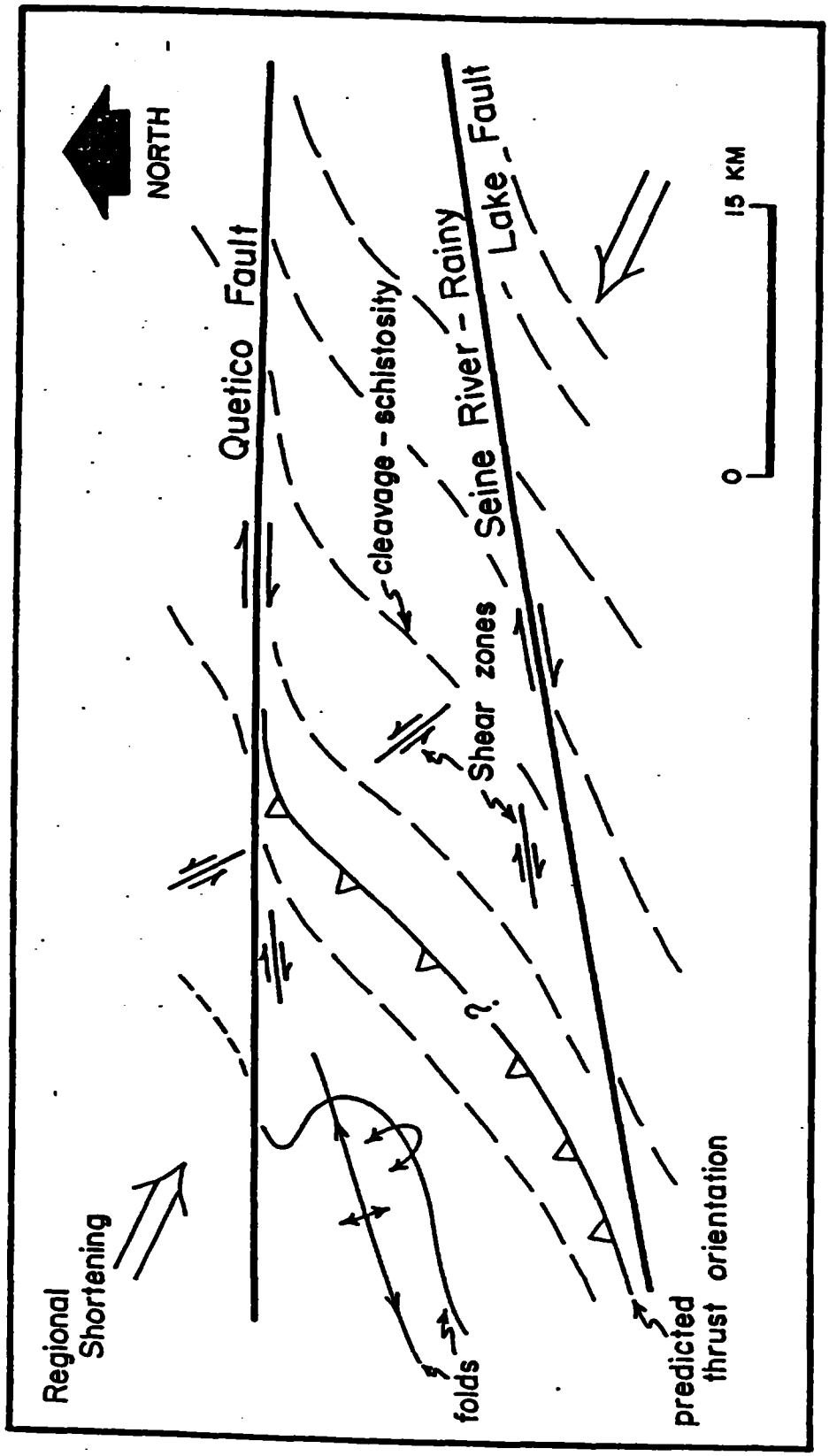

Fig. 5. Schematic diagram illustrating an interpretation of the main structural feature of the Mine Centre-Fort Frances area. Regionally developed cleavage, ENE oriented folds, conjugate ductile shear zones and the main boundary faults are compatible with shortening of the rocks in this area about a sub-horizontal northwesterly-directed axis.

the area support this interpretation. Three common orientations exist: two sets of right hand shear zones parallel with each of the major faults can be distinguished from a northwesterly striking, left hand conjugate set. The interpreted direction of regional shortening is consistent with that indicated by the folds (Figure 5).

14.0 PROPERTY GEOLOGY

The McKenzie-Gray property is underlain predominately by metamorphosed granitic intrusive rocks of the Bad Vermilion felsic intrusive of trondhjemite-tonalite composition containing xenoliths of mafic to intermediate metavolcanics. The northern portion of the property consists of metamorphosed anorthosite of the Bad Vermilion Lake gabbro intrusion.

The property geology described below is restricted to the area covered by the 1990 prospecting and geological mapping program at 1 cm.= 100 metres (see Figure 6), which only covers a portion of the claim group.

14.1 MAFIC TO INTERMEDIATE METAVOLCANICS

The mafic to intermediate metavolcanics are restricted to large lenticular xenoliths within the felsic intrusion in the surveyed area.

These units typically are fine to medium grained and porphyritic flows, massive to strongly foliated and are greenish-grey to black on the fresh surface. Weathered surfaces generally are dark green. These metavolcanics are moderately to strongly altered under greenschist facies metamorphism to chlorite, carbonate and sericite. The flows are best exposed in the south end of the McKenzie-Gray trench and on L 6+50E at 4+25S. The flows correlate strongly with the magnetic data as linear magnetic highs.

14.2 INTERMEDIATE TO FELSIC METAVOLCANICS

The intermediate to felsic metavolcanics do appear in the survey area, but are very rare. Only one outcrop of a dacitic flow was noted, as a discrete narrow xenolith within the felsic intrusive. This outcrop is located on L 3+50E at 0+70S. The flow is fine grained, moderately foliated and is light green-grey on the fresh surface and reddish-brown on the weathered surface. The unit is slightly altered, with carbonate being the most dominant.

14.3 METAMORPHOSED ANORTHOSITIC AND RELATED MAFIC INTRUSIVE ROCKS

The northern portion of the survey area above the baseline and on the north side of Bad Vermilion Creek is essentially a highly differentiated anorthositic to gabbroic intrusion, known as the Bad Vermilion Lake mafic intrusion. This intrusion is layered and expressed by modal variations in mineralogy, chemical variation across strike and locally by rhythmic mineral layering. The rock compositions range from

melagabbro to anorthosite with plagioclase compositions in the range of 45% to 80% anorthite. The contact zone between the Bad Vermilion mafic intrusion and the Bad Vermilion trondhjemite-tonalite sill are very difficult to distinguish do to the mineral composition, where the mafic intrusion becomes a quartz-bearing gabbro-diorite and the felsic intrusion becomes a more mafic-rich quartz-diorite to diorite.The mafic intrusive becomes more anorthositic as you traverse further north from the contact, and rhythmic mineral layering becomes more evident.

The intrusion varies from medium to coarse grained, slightly to moderately foliated and contains anhedral to euhedral phenocrysts of plagioclase up to 5 cm. in size in a finer grained pyroxene matrix. The anorthosite is grey-white on the weathered and fresh surfaces.

The anorthosite is best exposed between L 4+50E and L 6+50E at 3+00N along the edge of the swamp on the south side of Bad Vermilion Creek.

On the north side of Bad Vermilion Creek, a unit of the Bad Vermilion felic intrusive was noted intruding the Bad Vermilion Lake mafic intrusion indicating that the mafic intrusion pre-dates the felsic intrusion.

14.4 METAMORPHOSED GRANITIC INTRUSIVE ROCKS

As previously stated, the property is dominantly the Bad Vermilion trondhjemite-tonalite intrusion, constituting 80% of the surveyed area.

The felsic intrusive strikes parallel to regional foliation, dips steeply to the south and varies in composition from granodiorite with quartz-eye phenocrysts in the south to biotite-hornblende trondhjemite and finally diorite in the north, adjacent to the contact with the mafic intrusion.

The granodiorite to trondhjemite is medium to coarse grained, grey to white, composed of subhedral plagioclase and quartz crystals up to 0.5 cm. in size with mafic relics in a fine, dark grey groundmass giving it the appearance of a porphyritic texture. The units are slightly to strongly foliated, depending on amount of local shearing and have undergone weak to strong alteration. The degree of alteration is dependent on the amount of local shearing and varies from sausserite-chlorite in weak alteration to sericite-chlorite-ankerite in strong alteration.

The trondhjemite increases in mafic content towards the contact with the mafic intrusion from biotite-rich to biotite-hornblende rich trondhjemite to diorite.

The best exposures of the granodiorite with quartz-eye phenocrysts are in the south end of the McKenzie-Gray trench and the biotite-trondhjemite is best exposed along the baseline.

14.5 PLEISTOCENE DEPOSITS

The Precambrian rocks are covered by a thick sequence of varved clays in low-lying areas between outcrops south of the baseline and thicker deposits in topographic lows, such as recent lakes and swamps. Hilltops and outcrops are generally devoid of cover except for moss and lichen.

15.0 STRUCTURAL GEOLOGY

The rocks in the Mine Centre area have been progressively deformed to produce folds, ductile shear zones , ductile-brittle shear zones and faults. Sigmoidal ductile shear zones have been produced as a result of regional structural deformation.

15.1 FOLIATION AND FOLDS

The parallel alignment of platy minerals such as sausserite, chlorite, biotite, sericite and hornblende during regional metamorphism has imparted a distinct foliation on the rock assemblage. For the most part, the foliation parallels the strike and dip of the rocks and is generally NE-SW trending and dips steeply to the south. The foliation grades into more highly developed schistosity in more intensely deformed areas such as

within the Finger Lake shear zone.

The Finger Lake shear zone trends NE-SW along the margins of the Bad Vermilion trondhjemite-tonalite sill and the Bad Vermilion Lake mafic intrusion. This shear zone is represented by several narrow discrete zones of intense shearing within a 100-300 metre wide zone.

No major folds were observed during the survey. The only sense of any folding was observed within folded and boudinaged quartz veins.

15.2 FAULTS AND LINEAMENTS

Numerous NE-SW trending lineaments represented by topographic lows such as gorges and lakes, were recognized during the survey indicating the presence of faults and/or shear zones. Displacement if any, along these lineaments is difficult to ascertain do to the overburden cover and lack of marker horizons.

Secondary NW trending faults are also developed on the property and one such fault was noted in the area of the McKenzie-Gray vein. This fault was interpreted from the geophysical data, where the magnetic and VLF-EM surveys indicated a displacement of approximately 50 metres, with a (sinestral) left-lateral movement.

The most prominent lineament within the survey area is located along Bad Vermilion Creek and north to Finger Lake. This lineament

is called the Finger Lake shear zone.

15.3 METAMORPHISM

Generally, the metavolcanic rocks have been metamorphosed under greenschist facies conditions of regional metamorphism. This is reflected in the presence of chlorite-biotite-quartz-calcite assemblages.

16.0 TRENCHING AND CHANNEL SAMPLING

16.1 McKENZIE GRAY - EAST VEINS

The McKenzie Gray-East veins are located between L 8+00E and L 8+50E from 2+75S to 3+75S and are exposed in a roughly rectangular (100M * 50M) trench. During the 1990 field season, additional power stripping, detailed channel sampling and geological mapping at a scale of 1cm.= 1m. were conducted (see Figure 7).

A detailed mini-grid of (2M * 2M) squares was established using spray paint over the trench for better control on the geological mapping and channel sampling.

The detailed mapping revealed that the McKenzie Gray and East veins are located within a highly altered granodiorite with quartz-eye phenocrysts to trondhjemite felsic intrusive. The granodiorite to trondhjemite generally strike NE-SW and dip steeply to the south.

At the southwest and northeast ends of the trench, xenoliths of highly sheared mafic metavolcanics is cut by the quartz veins. The mafic metavolcanics are altered to sericite-chlorite-ankerite and contain numerous discontinuous sugary-white quartz with ankerite and pyrite, and ankerite stringers. These stringers parallel and cross-cut foliation, and are boudinaged and folded.

Also, in the southwest end of the trench, several discontinuous sugary-white quartz stringers with minor disseminated pyrite and carbonate were noted parallel and cross-cutting the foliation within sheared granodiorite.

The veins cross-cut stratigraphy, trending NW-SE within a progressive ductile to brittle highly fractured shear zone, and the veins are bounded within these fractures. Several micro-faulted quartz stringers on the southwest side of the trench indicate a sinestral (left-lateral) movement of the shear zone.

There appears to be a distinct alteration pattern towards the veins of the following: 1) sausserite-biotite-chorite, 2) chlorite-sericite, 3) sericite-pyrite. The amount of sericite-pyrite increases dramatically directly adjacent to the veins.

The McKenzie Gray-East veins represent two different generations and vein-type, with the East vein first and the McKenzie-Gray vein later as noted where the McKenzie-Gray was observed cross-cutting

the East vein. The McKenzie-Gray vein is a crack and seal-type vein, while the East vein is an extension-type vein.

The East vein is smokey-white to grey quartz and is weakly mineralized, containing disseminated grains of pyrite, minor amounts of chalcopyrite, galena and a grey metallic mineral which is interpreted to be silver-bearing from the assay results of the channel sampling and may possibly be argentite and/or a silver telluride. Numerous inclusions of highly altered granodiorite were noted with the vein, as well as inclusions of a biotite lamprophyre with disseminated pyrite. The vein is boudinaged, folded and averages 3-5 metres wide, and is exposed over a 90 metre strike length.

From the channel sampling, low and erratic gold and silver values were noted within the quartz vein, with occasional values up to 0.02 oz. Au/t and 2.5 oz. Ag/t over sample widths of less than 1 metre, representing only a portion of the vein width.

The McKenzie-Gray vein is a reddish-grey quartz, laminated with sericite schist occupying the shear planes parallel to the vein and contains minor amounts of carbonate and tourmaline. This vein is more consistently mineralized with high sulphide concentrations of black, brown and green sphalerite, chalcopyrite, galena and pyrite. The colour variation in the sphalerite is do to the Mg+Fe/Fe ratio, where the black sphalerite represents the iron-rich

member and the green sphalerite the magnesium-rich member. These sulphide concentrations are distributed throughout the length of the vein as disseminations and clots. No apparent zonation of the sulphides was noted.

The vein is bounded within fracture zones and is boudinaged and folded, both vertically and horizontally. The vein is interpreted to have a steep southwesterly dip and appears to be plunging steeply to the southeast. The vein splits in two places into seperate veins towards the northwest end of the trench, following two separate fractures. The vein averages approximately 1 metre wide over its exposed 100 metres long strike length and appears to narrow at both ends of the trench to less than 0.2 metres, where it disappears do to overburden cover.

The McKenzie-Gray vein does not contain any inclusions of granodiorite as seen in the East vein.

Channel samples were taken at 2 metre intervals along the total exposed length of the vein and assayed for Au, Ag, Cu and Zn. The results indicated anomalous values with high grade sections of gold, silver, zinc and copper over its entire length (see Channel Sample Overlay, Figure 8).

Channel sampling was also conducted between the McKenzie-Gray and East veins and on the west side of the McKenzie-Gray vein, within

the highly altered granodiorite consisting of essentially quartz-sericite schist with disseminated pyrite, sphalerite and galena. These channels were taken parallel to the veins, perpendicular to the strike of the rocks. The assay results from these samples indicate that the altered granodiorite containd no significant gold, silver and sulphide values.

A total of 330 channel samples totalling 931.21 feet were taken within and surrounding the McKenzie Gray and East vein trench.

No visible gold was noted during the detailed mapping of the McKenzie-Gray, but due to the high grade values some free gold probably exists within the vein.

A narrow, 0.4 metre wide reddish-grey quartz vein occupies the fracture marking the western boundary of the East vein. This vein may be a splay from the McKenzie-Gray vein, and contains anomalous gold, silver, zinc and copper values with high grade sections.

16.2 JOLLY RODGER VEIN

The Jolly Rodger vein is located on L 7+00E at 0+45S and the vein is exposed in a roughly rectangular (70M * 10M) trench. During the 1990 field program, power stripping and detailed mapping at a scale of 1cm. = 1m. were conducted (Figure 9).

A detailed mini-grid was established for better control, similar to the one established over the McKenzie-Gray and East veins.

The detailed mapping revealed that the Jolly Rodger vein is located within a highly sheared biotite-trondhjemite to quartz diorite with intercolated xenoliths of sheared, carbonatized mafic metavolcanic flows. These units generally strike NE-SW and dip steeply to the southeast. At the northeast end of the trench, the trondhjemite to quartz-diorite and quartz-bearing gabbro contact was observed.

The quartz-bearing gabbro contains numerous inclusions of carbonitized mafic metavolcanics and the inclusions are aligned parallel to the irregular contact zone.

The Jolly Rodger vein is exposed for 40 metres along strike and is open along strike, where the vein disappears do to overburden cover. The vein consists of sugary-white quartz with numerous sericite-ankerite filled shear planes and the occasional hematite spots indicating weathered out sulphides. The vein is boudinaged, folded, averages approximately 2 metres wide, is sub-parallel to parallel to the foliation and is restricted to the more intense shearing.

The sheared trondhjemite and carbonitized mafic flows contain sericite-chlorite-ankerite alteration with up to 5% disseminated pyrite and numerous boudinaged and folded sugary-white quartz and

ankerite stringers.

A distinct increase in foliation from slight to strong over the very short distance of approximately 0.5 metres was noted north of the quartz vein within the trondhjemite at the southwest end of the trench. This is interpreted from geological and geophysical data to be the northern boundary of the Finger Lake Shear Zone.

Several micro-faults were observed in the trench, all indicating (sinestral) left-lateral movement and generally strike north-south.

The Jolly Rodger trench is located at the bottom of a south-facing ledge, with thick overburden consisting of varved clays to the south. The close proximity of the vein to Bad Vermilion Creek resulted in flooding of the trench and therefore, the lithology on the south side of the vein was mostly obsquired.

Results from the detailed channel sampling were not available at the time the author completed this report.

16.3 ROAD VEIN

The Road vein was exposed during the establishment of road access to the Jolly Rodger vein and is located on L 7+00E at 1+65S. The vein is poorly exposed along a 40 metre strike length and is open along strike, where it disappears do to overburden cover.

The vein is located parallel to the foliation within a 10-15 metre wide NE-SW striking shear zone consisting of a sheared granodiorite with large blue quartz-eye phenocrysts up to 0.5 cm. in size and minor intercolated rafts of sheared carbonitized mafic metavolcanics. The vein consists of sugary-white quartz with minor ankerite and disseminated pyrite. The sheared granodiorite and mafic volcanics contain strong sericite-chlorite-ankerite alteration and minor disseminated pyrite.

The shear zone containing the Road vein can be traced to the southwest for 125 metres, to just north of the Big John vein, where the shear disappears do to overburden cover.

During the 1990 field program, no addition power stripping or detailed mapping were conducted on the Big John Vein.

Several narrow shear zones, quartz veins and old exploration pits were discovered during the prospecting and geological mapping program of the property. All these were selectively grab sampled, but returned only anomalous silver values of up to 0.41 oz./ton and no gold.

17.0 ALTERATION

The alteration of the mafic metavolcanics flows include chloritization and carbonitization, while the felsic intrusive of

granodiorite to trondhjemite include sausseritization, biotitization, chloritization and minor carbonitization .

The most intense alteration coincided with shear zones and associated strongly foliated rocks. The sheared equivalents of the above rock types include silicification, sericitization, chloritization and carbonitization.

Secondary mineralization included pyrite, ankerite and calcite.

18.0 MINERALIZATION

Vein-type mineralization appears to be the only type hosting economic concentrations of gold on the property.

Structurally, these veins are hosted in ductile shear zones and Poulsen (1984) suggested that three major classifications of veining within ductile shear zones can be recognized 1) first-order veining which generally parallels the schistosity 2) second-order veining which generally cross-cuts the foliation 3) third-order veining which sub-parallels the general foliation of shearing.

Poulsen (1984) also classified mineral deposits in the Mine Centre area of vein-type mineralization as TYPE 3, which is a quartz-gold-sulphide vein in a shear zone.

The McKenzie-Gray vein is the only vein to date of economic importance and is classified as TYPE 3 of a second-order vein which is normal to the general foliation within a discrete shear zone and occupies a central first-order fissure. This fissure is interpreted to represent a continual transition from ductile to brittle deformation.

The McKenzie-Gray vein is a crack and seal-type vein with an average width of approximately 1 metre, consisting of reddish-grey quartz with minor carbonate and local tourmaline. The vein is laminated, with the laminae representing shear planes consisting of sericite schist. Sulphide mineralization consists of black, brown and green sphalerite, chalcopyrite, galena and pyrite of variable concentrations. Arsenopyrite and argentite are rare accessories.

Gold content of the vein is variable along strike, but range up to as high as 1.0 oz. Au/ton over the total width of the vein.

The shear zones and gold-bearing veins are found in most lithologies in the Mine Centre area, but there is a clear affinity for the coarse grained felsic intrusive host of the tonalite-trondhjemite suite, which occupies most of the McKenzie-Gray property.

Although shear zones are present throughout the property, only the one shear zone normal to the general foliation of the rocks has been found on the property to date and to contain economic concentrations of gold-sulphide mineralization. To date, first-order and third-order quartz veins found on the property have only contained sporatic, anomalous gold and silver values.

The above relationships suggest that a late-tectonic emplacement of the veins in rocks which readily formed dilatent zones at metamorphic grades suitable for the precipitation of gold.

19.0 GEOPHYSICS

19.1 THEORY OF OPERATION

(i) The Proton Magnetometer

The Proton Precession Magnetometer is so named because it utilizes the precession of spinning protons or nuclei of the hydrogen atom in a sample of hydrocarbon fluid to measure the total magnetic field intensity. The spinning protons in a sample of kerosene behave as small, spinning magnetic dipoles. These magnets are temporarily polarized by the application of a uniform magnetic field generated by a current in a coil of wire. When the current is removed, the spin of the protons causes them to precess about the direction of the ambient (earth's) magnetic field. The precessing protons then generate a small signal whose frequency is precisely proportional to the total magnetic field

intensity and independent of the orientation the coil (sensor). The proportionality which relates frequency to the field intensity is called the gyromagnetic ratio of the proton. The precession frequency, typically 2000 Hz., is measured as the absolute value of the total magnetic intensity with an accuracy of 1 gamma.

The total magnetic intensity, as measured by the proton magnetometer is the magnitude of the earth's field vector independent of its direction. The measurement can be expressed as a length (50,000 gammas) of the earth's field vector. A local disturbance, say 10 gammas, would add (or subtract) to the undisturbed field of 50,000 gammas in the usual manner of vector addition. Since the proton magnetometer measures only the magnitude of the resultant vector (whose direction is almost parallel to the undisturbed total field vector), that which is measured is very nearly the component of the disturbance vector in the direction of the undisturbed total field. Thus the change in the total field intensity is called the anomaly.

(ii) The VLF EM-16

The VLF transmitting stations operating for communications with submarines have a vertical antenna. The antenna current is thus vertical, creating a concentric horizontal magnetic field around them. When these magnetic fields meet conductive bodies in the ground, there will be secondary fields radiating from these bodies. The VLF EM-16 measures the vertical components of

these secondary fields.

The VLF EM-16 is a sensitive receiver covering the frequency bands of the VLF transmitting stations with means of measuring the vertical field components.

The receiver has two inputs with two receiving coils built into the instrument. One coil has a normally vertical axis and the other has a horizontal axis.

The signal from one of the coils (vertical axis) is first minimized by tilting the instrument. The tilt angle on the VLF EM-16 is calibrated as a percentage and not as a true dip. This is significant in the calculation of the Fraser Filter data since the larger numbers obtained from the percentage meter will result in larger filtered values. The remaining signal in this coil is balanced out by a measured percentage of a signal from another coil, after being shifted 90 degrees. This coil is normally parallel to the primary field.

Thus, if the secondary field signals are small compared to the primary horizontal field, the mechanical tilt angle is an accurate measurement of the vertical real component, and the compensation 90 degree signal from the horizontal coil is a measure of the quadrature vertical signal.

19.2 SURVEY PROCEDURE

(i) The Proton Magnetometer

The magnetometer data was collected at 12.5 metre intervals using a Barringer Proton Magnetometer using the looping method and tieing into the baseline. The purpose of the looping was to help in correcting the fluxuations in the earth's magnetic field as the survey took place. Data was corrected, then plotted on a map scale of 1:1000 and contoured at 50 gamma intervals below 250 gammas and 100 gamma intervals above 250 gammas.

(ii) The VLF EM-16

The Annapolis, Maryland transmitter station was chosen because of its favourable orientation to the geology on the property.

VLF readings were taken at 25 metre intervals over the grid using the Geonics EM-16 with both the dip angle and the quadrature being noted at each station.

To take a reading, the reference coil ("T") in the lower end of the handle is orientated along the magnetic lines 90 degrees to the station direction. This is achieved by swinging the instrument back and forth until a minimum sound intensity (null) is heard. The quadrature dial is then adjusted until the sound level is further minimized (nulled). The dip angle is then read from the inclinometer and the quadrature from the dial. The north direction was always faced when a reading was taken.

19.3 DISCUSSION OF RESULTS

(i) Proton Magnetometer Survey

The magnetic survey was successful in defining a number of trends which occur over the survey area. All of the magnetic responses are weak to moderate with values being generally between 350 to 1250 gammas above background. Responses such as these are indicative of an assemblage of disseminated to semi-massive pyrite. The longer trends are likely the result of large lenticular rafts(?) of sulphide-bearing mafic metavolcanics and contact zones between the felsic trondhjemite and the anorthositic gabbro intrusions (see Figure 10).

The most interesting magnetic response occurs between L 8+00E at 3+50S and L 8+25E at 3+00S, were a narrow, linear magnetic high of 150-200 gammas approximately 200 metres long and open to the east, appears to be offset 50 metres. This apparent fault strikes NW-SE, indicates a left-lateral movement and correlates with the location and strike direction of the McKenzie-Gray vein.

A narrow, less than 100 metre wide, NE-trending series of linear magnetic highs is located between L 2+50E at 2+00S and L 7+50E at 0+25S. This trend has a 550 metre strike length and varies from 400-1300 gammas above background. The best response along the trend occurs on L 7+25E at 0+37.5S where a strong dipole occurs. This area was surface stripped to reveal the Jolly Rodger quartz vein within sheared trondhjemite and mafic metavolcanics.

Another trend occurs north of the baseline between L 3+50E and L6+00E at approximately 2+00N, where a series of spot magnetic highs within a narrow linear trend appear to outline the contact between the felsic trondhjemite and the anorthositic gabbro intrusions. These magnetic spot highs vary from 350 to 900 gammas above background and besides representing a lithologic contact zone, may indicate concentrations of disseminated sulphides.

There are a number of spot one line magnetic responses which occur in the surveyed area and may represent isolated lenses of disseminated suphides within rafted mafic metavolcanics.
(ie. L 6+50E/4+25S)

The magnetic survey also indicated a weak linear magnetic depression associated with the McKenzie-Gray and East veins. This trend extends NE-SW from the veins and may be due to extensive alteration of the tonalite, as observed at the McKenzie-Gray, East, Big John and Road veins.

(ii) VLF-EM Survey

A total of (15) weak to moderate conductors were outlined in the survey, and are discussed in alphabetical order below (see Figure 11).

Conductor "A" is a moderate 175M long anomaly located between L4+50E at 2+50N and L 6+00E at 2+75N. Topographically, the anomaly

correlates with the base of a cliff in overburden cover and may represent a weak bedrock response of a narrow shear zone. A flanking magnetic high 50M to the south of the conductor represents the tonalite-anorthositic gabbro contact.

Conductor "B" is a weak 75M long anomaly located between L 5+50E at 1+50N and L 6+00E at 1+30N. This conductor has no magnetic correlation and is probably do to conductive overburden.

Conductor "C" is a weak to moderate 75M long anomaly located between L 1+50E and L 2+00E at 1+15S. This conductor is located in an area of overburden cover, but correlates with a weak magnetic low and is believed to be do to a weak bedrock response. Especially on L 2+00E, where the conductivity is strongest.

Conductor "D" is a weak 475M long anomaly located between L 2+00E at 1+65S and L 6+50E at 0+75S. This conductor has a flanking magnetic high directly to the south and may be due to a weak bedrock response of a possible shear zone. Topographically, the total length of the conductor is located in an area of overburden cover and therefore, may also represent conductive overburden.

Conductor "E" is a weak 450M long anomaly located between L 4+50E at 2+50S and L 8+50E at 1+80S. This conductor has no magnetic correlation, and may be do to a weak bedrock response of a possible shear zone. Topographically, the total length of the conductor is

located in an area of overburden cover and therefore, maybe do to conductive overburden.

Conductor "F" is a weak to moderate 75M long anomaly located between L 7+00E at 1+30S and L 7+50E at 1+80S. This conductor has a flanking magnetic high to the north and maybe do to a weak bedrock response. Topographically, the conductor is in an area of overburden cover and therefore, maybe do to conductive overburden.

Conductor "G" is a weak 75M long anomaly located between L 9+00E at 1+15S and L 9+50E at 1+35S. This conductor correlates with the edge of a large swamp and it is believed to be the result of a topographic response.

Conductor "H" is a weak to moderate 175M long anomaly located between L 6+00E and L 7+50E at 2+70S. This conductor has no magnetic correlation and maybe do to a weak bedrock response.

Conductor "I" is a weak to moderate 125M long anomaly located between L 8+00E at 2+35S and L 9+00E at 2+90S. This conductor is flanked by a narrow magnetic high trend, 40M to the south. This magnetic trend appears to be faulted left-laterally and may indicate that conductors "H" and"I" are the same conductor but are faulted off. This conductor maybe do to a weak bedrock response.

Conductor "J" is a very weak 75M long anomaly located between L 7+00E at 3+45S and L 7+50E at 3+60S. This conductor has no direct magnetic correlation, and maybe do to conductive overburden.

Conductor "K" is a weak 125M long anomaly located between L 7+00E at 4+20S and L 8+00E at 4+10S. This conductor correlates with a narrow magnetic high trend and maybe do to a weak bedrock response or conductive overburden.

Conductor "L" is a weak 275M long anomaly located between L 8+50E at 5+05S and L 11+00E at 5+55S. This conductor correlates with a swamp and is probably do to that topographic feature.

Conductor "M" is a weak, broad 175M long anomaly located between L 12+00E at 0+90S and L 13+50E at 0+70S. This conductor correlates with a swamp and is probably do to that topographic feature.

Conductor "N" is a very weak 125M long anomaly located between L 12+00E and L 13+00E at 2+70S. This conductor has no direct magnetic correlation, and is believed to be do to conductive overburden.

Conductor "O" is a weak to moderate 125M long anomaly located between L 11+00E at 3+75S and L 12+00E at 4+00S. This conductor correlates with a swamp and is probably do to this topographic feature.

There are three one line and isolated very weak responses in the survey area, and it is felt that these conductors are do to topographic features.

20.0 RECOMMENDATIONS

The Nipigon Gold Resources-McKenzie Gray property has a moderate percentage of bedrock exposure, and although having an extensive exploration program performed over it, the property still requires additional ground work to evaluate its mineral and economic potential. The following outlines the areas that are recommended to receive this proposed work. A three phase program is put forth, some of which will apply to some zones/areas, while in others they will be omitted based on data interpretation. Briefly they include the following:

PHASE I

A power stripping, channel sampling and detailed mapping program of the following areas:

(i) Power stripping of the Road Vein along strike in both directions to determine its strike length, followed by detailed geological mapping and channel sampling.

(ii) Power stripping southwest of the Jolly Rodger Vein along the edge of the narrow valley to determine its strike length, followed by detailed geological mapping and channel sampling.

(iii) Power stripping of two 3 metre wide trenches, one parallel to L 2+00E, from 0+60S south to the edge of the swamp, to expose more outcrop in an area of intensely sheared and altered granodiorite and the other trench parallel to foliation, 50 metres on either side of L 2+00E at 1+35S where an outcrop of intensely sheared granodiorite is located. This is to be followed up by detailed geological mapping and channel sampling.

(iv) Completion of the power stripping around the Big John Vein, followed by detailed geological mapping and channel sampling.

PHASE II

(1) A data compilation series of all the previous work to date should be completed, including a re-examination of the core drilled by Corporation Falconbridge Copper in 1985.

(2) A feasibility study should be conducted on the small-scale mining potential of the McKenzie-Gray Vein.

PHASE III

A limited diamond drill program to test any new mineralized zones outlined in Phase I and II and should include the following:

McKenzie-Gray Vein

As previously stated, the McKenzie-Gray Vein has received a full compliment of exploration techniques for its evaluation.

However, the encouraging results received to date indicate that futher work should be continued.

The trenching, detailed geological mapping, channel sampling and previous diamond drilling revealed a complex structural development, where the quartz vein is boudinaged, folded, controlled within fractures and possibly plunging to the southeast.

Previous drilling to date has only tested the vein along the exposed 100 metre strike length and to a depth of 70 metres. At the southeast corner of the McKenzie-Gray trench, the vein was still approximately 1 metre wide and channel samples of 0.82 oz. Au/ton and 19.71 oz. Ag/ton were recorded across the vein at the last point of exposure before the vein disappears do to overburden cover.

It is recommended that the McKenzie-Gray vein should be tested to shallow vertical depths of 30 and 70 metres to the southeast, to determine whether the vein increases in width and grade or whether the vein terminates.

20.1 GENERAL RECOMMENDATIONS

The preceeding sections outline briefly the proposed work recommended for each zone and/or area. The various activities outlined would be conducted in three separate programs, with

Phase I being the continuation of the 1990 program still in progress, Phase II would be conducted during the winter of 1990 and Phase III would commence during the spring-summer of 1991.

A proposed detailed budget was not requested at this time to calculate the costs of completing the above recommended program.

21.0 CERTIFICATE OF QUALIFICATIONS

I, David J. Gliddon, of 603-199 Academy Drive, Thunder Bay, Ontario, P7B 5W2, do hereby certify that:

1. I am a geological consultant employed by Nipigon Gold Resources Limited.

2. I am a graduate of :

   (i) Cambrian College of Applied Arts and Technology, Sudbury, Ontario with a Geology Engineering Technologist Diploma (1976).

   (ii) Lakehead University, Thunder Bay, Ontario with an Honours Bachelor of Science Degree in Geology (1985).

3. I have been practicing my profession for fifteen years and have worked as a consulting geologist since 1985.

4. I am a member in good standing of the Prospectors and Developers Association of Canada.

5. I do not have, nor do I expect to receive either directly or indirectly any interest in McKenzie-Gray property or in the securities of Nipigon Gold Resources Limited.

Thunder Bay, Ontario

David J. Gliddon, B.Sc. (Hons.)

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APPENDIX I

CERTIFICATE OF ANALYSIS

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

Established 1928

Assay Certificate

0W-0618-RA1

Company: **NIPIGON GOLD RESOURCES**

Date: MAY-10-90

Project:

Copy 1. BROOKLYN PARK,MINNESOTA, U.S.A.
2. FAX TO 807-599-2988 & 612-424-1174

Attn: **MAX REITER**

We hereby certify the following Assay of 7 ROCK samples submitted MAY-09-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8562	0.002		0.10
8563	0.020	0.016	3.60
8564	Nil		0.01
8565	Nil		Nil
8566	Nil		0.04
8567	Nil		0.01
8568	Nil		Nil

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705) 642-3244. FAX (705)642-3300

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Established 1928

Assaying - Consulting - Representation

Assay Certificate

0W-0698-RA1

Company: **NIPIGON GOLD RES.**

Date: JUN-01-90

Project:

Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

Attn: **MAX REITER**

We hereby certify the following Assay of 31 ROCK samples submitted MAY-29-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton
8569	Nil				0.02
8570	0.002				0.01
8571	Nil				0.08
8572	Nil				0.01
8573	0.002	Nil			0.41
8574	Nil				0.08
8575	Nil				0.01
8576	Nil				0.05
8577	Nil				0.01
8578	Nil				0.01
8579	Nil				0.02
8580	Nil				0.01
8581	Nil				0.05
8582	Nil				0.01
8583	Nil				0.01
8584	0.002				0.19
8585	0.030				0.03
8615	0.162	0.148			0.09
8616	0.436	0.436	0.562	0.520	0.26
8617	0.026				0.12
8618	0.004				0.07
8619	0.086				0.29
8620	0.002				0.03
8621	0.002				0.08
8622	Nil				0.04
8623	0.020	0.018			0.06
8624	Nil				0.15
8625	Nil				0.19
8626	Nil				0.01
8627	0.010				0.06
8628	0.050	0.046			0.06

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G. Lebel / Manager

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Assay Certificate

0W-0711-RA1

Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-04-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 41 ROCK samples submitted MAY-29-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Ag oz/ton	Zn %
8651	0.002			0.23	
8652	Nil			0.05	
8653	0.006			0.07	
8654	0.560	0.604	0.598	0.49	
8655	0.006			0.97	
8656	0.332	0.288		0.29	
8657	Nil			0.03	
8658	Nil			0.04	0.03
8659	Nil			0.02	0.04
8660	0.140			0.17	
8661	0.004			0.16	
8662	0.002			0.01	
8663	Nil			0.01	
8664	0.630	0.736		1.15	
8665	0.002			0.02	
8666	0.004			0.01	
8667	0.046			0.12	
8668	0.002			0.02	
8669	Nil			0.01	0.03
8670	Nil			0.01	0.03
8671	0.008			0.02	
8672	Nil			0.01	
8673	0.002			0.01	0.02
8674	0.002			0.02	
8675	0.066	0.064		1.24	
8676	0.002			0.17	
8677	Nil			0.13	
8678	0.002			0.01	0.03
8679	Nil			0.01	
8680	0.020			0.25	

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Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-04-90
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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 41 ROCK samples submitted MAY-29-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Ag oz/ton	Zn %
8681	0.820	0.720	0.933	19.71	
8682	0.002			0.08	
8683	0.002			0.09	
8684	0.002			0.05	
8685	Nil			0.10	
8686	0.004			2.21	
8687	0.008			0.09	
8688	0.002			0.03	
8689	0.004			0.01	
8690	0.006			0.03	
8691	0.002			0.02	

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G. Lebel / Manager

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Company: **NIPIGON GOLD RES.**

Date: JUN-05-90

Project:

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Attn: **MAX REITER**

2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 16 ROCK samples submitted MAY-31-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton	Co ppm
3101	0.004		0.37	95
3102	0.022		2.08	186
3103	0.002		0.15	
3104	0.002		0.08	
3105	0.034	0.030	2.89	
3106	0.030		1.43	
3107	Nil		0.06	
3108	0.004		0.06	
3109	Nil		0.10	
3110	Nil		0.34	
3111	Nil		0.02	
3112	0.002		0.09	
8586	Nil		0.11	
8587	0.002		0.05	
8588	0.002	0.002	0.11	
NO TAG	Nil		0.01	

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G. Lebel / Manager

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Assay Certificate

0W-0728-RA1

Company: **NIPIGON GOLD RES.**

Date: **JUN-06-90**

Project:

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Attn: **MAX REITER**

2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 36 ROCK samples submitted JUN-01-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Ag oz/ton	Cu ppm	Zn %
8759	0.006	0.004		0.13	24	0.04
8760	Nil			0.07	32	0.01
8761	0.004			0.24	39	0.01
8762	0.002			0.09	19	0.01
8763	Nil			0.02	15	0.01
8764	Nil			0.03	33	0.02

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Company: NIPIGON GOLD RES.

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Attn: MAX REITER

Date: JUN-06-90

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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 36 ROCK samples submitted JUN-01-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Ag oz/ton	Cu ppm	Zn %
8629	0.344	0.312		0.22	799	0.24
8630	0.152			0.16	178	0.40
8631	0.006			0.26	2050	0.04
8632	0.008			0.06	150	0.09
8633	0.168			0.12	348	0.62
8634	0.044			0.04	127	0.22
8635	0.386	0.374		0.86	2510	1.59
8636	0.076			1.95	4700	5.81
8637	0.140			0.33	412	0.08
8638	0.084			0.47	996	0.78
8639	0.420	0.390		1.71	2480	4.30
8640	0.042			0.93	1130	3.94
8641	0.220			0.33	1060	0.14
8642	0.008			0.13	84	0.03
8643	0.092			0.65	1580	0.09
8644	0.740	0.690	0.679	1.41	6060	4.62
8645	0.556	0.584		0.40	1180	0.69
8646	0.368			0.66	1150	3.57
8647	0.006			0.12	477	1.68
8648	0.020			0.16	630	6.94
8649	0.006			0.12	2350	0.11
8650	0.002			0.14	160	0.03
8751	Nil			0.03	11	0.01
8752	Nil	0.002		0.03	16	0.01
8753	0.002			0.05	15	0.01
8754	Nil			0.01	7	0.01
8755	Nil			0.03	12	0.01
8756	Nil			0.01	12	0.01
8757	Nil			0.01	35	0.01
8758	0.002			0.07	22	0.01

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Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-07-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 33 ROCK samples submitted JUN-04-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8765	Nil		0.02
8766	0.002		0.03
8767	0.002		0.09
8768	Nil		0.08
8769	0.022		0.10
8770	0.098		0.10
8771	Nil		0.03
8772	0.100	0.104	0.17
8773	Nil		0.08
8774	0.002		0.33
8775	0.002		0.05
8776	Nil		0.02
8777	Nil		0.02
8778	0.002		0.06
8779	0.002		0.06
8780	Nil		0.01
8781	0.002		0.34
8782	0.028	0.026	1.24
8783	Nil		0.49
8784	0.002		0.12
8785	0.032		2.41
8786	0.006		0.06
8787	0.036	0.036	0.08
8788	0.002		0.12
8789	0.002		0.25
8790	0.002		0.63
8791	0.002		0.17
8792	0.002		0.49
8793	0.004		0.43
8794	0.004		0.45

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Attn: MAX REITER

Date: JUN-07-90
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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 33 ROCK samples submitted JUN-04-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8795	0.004		0.15
8796	0.036	0.030	2.43
8797	0.010		0.37

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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 32 ROCK samples submitted JUN-04-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton	Zn %
8692	Nil		0.05	0.14
8693	Nil		0.15	0.18
8694	0.026		2.37	-
8695	0.124	0.112	0.08	0.08
8696	0.024		0.18	0.06
8697	0.002		0.05	
8698	Nil		0.02	
8699	Nil		0.05	
8700	Nil		0.01	
8701	Nil		0.03	
8702	Nil		0.02	
8703	Nil		0.01	
8704	0.002		0.03	
8705	Nil		0.03	
8706	Nil	0.002	-	
8707	0.002		-	
8708	Nil		0.04	
8709	Nil		0.03	
8710	Nil		0.02	
8711	Nil		0.01	
8712	0.002		-	
8713	Nil		0.02	
8714	Nil		0.39	
8715	0.002		0.24	
8716	Nil		0.03	
8717	Nil		0.05	
8718	Nil		0.10	
8719	Nil		0.04	
8720	Nil		0.01	
8721	Nil		0.05	

Certified by G. Lebel

G. Lebel / Manager

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Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-07-90
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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 32 ROCK samples submitted JUN-04-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton	Zn %
8722	0.002		0.01	
8723	0.024	0.020	0.93	

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G. Lebel / Manager

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Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-07-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 9 ROCK samples submitted JUN-04-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8724	0.002		0.02
8725	0.002		0.01
8726	Nil		0.02
8727	0.016	0.014	0.03
8728	0.004		0.01
8729	0.002		0.01
8730	Nil		0.05
8731	Nil	Nil	0.79
8732	Nil		0.03

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G. Lebel / Manager

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Company: NIPIGON GOLD RES.
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Attn: MAX REITER

Date: JUN-07-90
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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 9 ROCK samples submitted JUN-05-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8733	0.006		0.21
8734	0.002		0.02
8735	0.002	Nil	0.01
8736	Nil		0.01
8737	0.002		0.01
8738	Nil		0.01
8739	0.004		0.41
8740	0.010		0.08
8741	0.052	0.048	0.19

Certified by G. Lebel

G. Lebel / Manager

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Assay Certificate

0W-0755-RA1

Company: **NIPIGON GOLD RES.**
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Attn: **MAX REITER**

Date: JUN-12-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 39 ROCK samples submitted JUN-06-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton	Cu ppm	Zn %
3113	0.016				1.64		
8742	0.702	0.696			0.65		0.04
8743	0.130				0.45		0.04
8744	0.538				1.60		3.62
8745	0.070				1.86		2.81
8746	0.438				1.61	19500	0.45
8747	0.984	1.072	1.050	1.040	4.78	5780	4.28
8748	0.348				1.93	4940	1.20
8749	0.006				0.16	1070	0.05
8750	0.566	0.580			2.15	12400	1.39
8801	0.016				0.58	830	0.30
8802	0.402				1.84	4490	5.06
8803	0.114				1.66	7860	
8804	0.002				0.07		
8805	0.058				1.14	1800	11.10
8806	0.002				0.08		0.34
8807	0.002				0.14		
8808	0.156	0.158			3.02		12.84
8809	0.002				0.71		0.04
8810	Nil				0.10		0.15
8811	0.166	0.146			0.53		1.61
8812	0.010				0.21		0.08
8813	0.010				0.99		0.04
8814	0.026				2.56		
8815	0.004				0.11		
8816	0.016				0.52		
8817	0.008				0.28		
8818	0.014				0.31		
8819	Nil				0.18		
8820	0.002				0.08		

Certified by G. Lebel

G. Lebel / Manager

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Date: JUN-12-90

Project:

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Attn: **MAX REITER**

2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 39 ROCK samples submitted JUN-06-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton	Cu ppm	Zn %
8821	0.002				0.15		
8822	0.004				0.07		
8823	0.012				0.08		
8824	0.002				0.07		
8825	0.054				0.26		
8826	0.002				0.07		
8827	Nil				0.22		
8828	0.161	0.180			0.64		
8829	0.008				0.89		

Certified by G. Lebel

G. Lebel / Manager

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Assay Certificate

0W-0764-RA1

Company: **NIPIGON GOLD RESOURCES** Date: JUN-13-90

Project:

Attn: **M. REITER**

Copy 1. Minnesota
2. fax to USA and Thunder Bay

We hereby certify the following Assay of 23 ROCK samples submitted JUN-08-90 by .

Sample Number	Au oz ton	Au check oz ton	Ag oz/ton	Zn %
8831	0.002		0.18	
8832	0.002		0.06	
8833	0.022		1.40	
8834	0.090	0.075	0.68	5.06
8835	Nil		0.05	
8836	0.028		0.93	
8837	0.002		0.10	
8838	0.008		0.02	
8839	0.004		0.36	
8840	Nil		0.10	
8841	0.004		0.02	
8842	0.002		0.02	
8843	0.002		0.02	
8844	0.002		0.02	
8845	Nil	0.002	0.06	
8846	Nil		0.12	
8847	Nil		0.02	
8848	Nil		0.03	
8849	Nil		0.04	
8850	Nil		0.02	
8851	0.002	0.002	0.01	
8852	Nil		0.03	
8853	0.004		0.13	

Certified by G. Lebel

G. Lebel / Manager

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0W-0771-RA1

Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-14-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 38 ROCK samples submitted JUN-11-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton	Cu ppm	Zn %
8854	Nil				0.02	18	
8855	Nil				0.02		
8856	0.018				0.02		
8857	0.002				0.01		
8858	0.002				0.01		
8859	Nil				0.03		
8860	0.002				0.29		
8861	0.002				0.16		
8862	0.006				0.45		
8863	Nil				0.26		
8864	0.020	0.014			0.13		
8865	0.024				0.52		
8866	Nil				0.20		
8867	Nil				0.03		
8868	Nil				0.21		
8869	0.002				0.04		
8870	0.002				1.27		
8871	Nil				0.01		
8872	Nil				0.02		
8873	Nil				0.16		0.04
8874	0.158				0.29		0.41
8875	0.930	0.928			0.98		10.44
8876	1.050	0.990	1.380	1.302	0.50		0.93
8877	0.072				0.07		6.21
8878	0.386	0.334			0.82		9.12
8879	Nil				0.08		
8880	0.070				0.43		0.08
8881	0.022				0.14		
8882	0.058	0.046			1.01		0.46
8883	0.020				0.08		0.03

Certified by G. Lebel

G. Lebel / Manager

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Company: NIPIGON GOLD RES. **Date:** JUN-14-90

Project:

Attn: MAX REITER

Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 38 ROCK samples submitted JUN-11-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton	Cu ppm	Zn %
8884	0.656	0.614			3.16		3.98
8885	0.016				0.64		
8886	0.022				0.14		0.03
8887	0.018				0.12		0.01
8888	0.708	0.622	0.654	0.540	1.08	6760	1.58
8889	0.016				0.47		
8890	0.036				0.07		
8891	Nil				0.09		

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705) 642-3244. FAX (705)642-3300

Swastika Laboratories

A Division of Assayers Corporation Ltd.

Assaying - Consulting - Representation

Established 1928

Assay Certificate

0W-0787-RA1

Company: **NIPIGON GOLD RES.**
Project:
Attn: **MAX REITER**

Date: JUN-15-90
Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 13 ROCK samples submitted JUN-11-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8798	0.004		0.37
8799	0.002		0.45
8800	0.008		1.02
8830	0.020	0.020	0.55
8892	0.006		0.58
8893	0.008		1.65
8894	0.002		0.26
8895	0.004	0.008	0.33
8896	0.002		0.09
8897	0.006		0.35
8898	0.004		0.06
8899	0.004		0.09
8900	Nil		0.54

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0
Telephone (705) 642-3244 FAX (705) 642-3300

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0W-0800-RA1

Company: NIPIGON GOLD RES.

Project:

Attn: MAX REITER

Date: JUN-15-90

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2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 39 ROCK samples submitted JUN-12-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton
8901	0.002	0.002			0.19
8902	Nil				0.09
8903	0.002				0.29
8904	0.004				0.12
8905	0.002				0.11
8906	0.002				0.31
8907	0.004				0.51
8908	0.004				0.29
8909	0.012	0.014			0.89
8910	Nil				0.19
8911	0.006				0.31
8912	0.004				0.17
8913	0.006				0.64
8914	0.002				0.08
8915	0.004				0.20
8916	0.002				0.20
8917	Nil				0.01
8918	0.002				0.58
8919	Nil				0.37
8920	Nil				0.05
8921	0.002				0.02
8922	0.002				0.02
8923	Nil				0.07
8924	Nil				0.01
8925	Nil				0.01
8926	Nil	Nil			0.01
8927	Nil				0.01
8928	Nil				0.01
8929	Nil				0.01
8930	Nil				0.01

Certified by G. Lebel

G. Lebel / Manager

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Company: NIPIGON GOLD RES.
Project:
Attn: MAX REITER

Date: JUN-15-90
Copy 1. BROOKLYN PARK, MINNESOTA, U.S.A.
2. FAX TO 807-599-2899 AND 612-424-1174

We hereby certify the following Assay of 39 ROCK samples submitted JUN-12-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Au 2nd oz/ton	Au check 2nd oz	Ag oz/ton
8931	Nil				0.01
8932	Nil				0.01
8933	Nil				0.01
8934	0.002				0.28
8935	Nil				0.08
8936	Nil				0.06
8937	Nil				0.04
8938	0.002				0.01
8939	0.100	0.106	0.100	0.088	0.15

Certified by G. Lebel

G. Lebel / Manager

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Telephone (705) 642-3244 FAX (705)642-3300

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Established 1928

Assay Certificate

0W-0820-RA1

Company: NIPIGON GOLD RESOURCES

Date: JUN-19-90

Project:

Attn: MAX REITER

Copy 1. Brooklyn Park,Minnesota. U.S.A.
2. FAX TO (807)599-2899 & 612-424-1174

We hereby certify the following Assay of 6 ROCK samples submitted JUN-15-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
8940	0.024	0.020	0.98
8941	Nil		0.01
8942	0.002		0.14
8943	0.002		0.17
8944	0.002		0.09
8945	0.002	0.004	0.52

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705) 642-3244 FAX (705)642-3300

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Assay Certificate

0W-0830-RA1

Company: NIPIGON GOLD RES.

Date: JUN-21-90

Project:

Copy 1. BROOKLYN PARK,MINNESOTA,U.S.A.

Attn: MAX REITER

2. FAX TO 612-424-1174 AND 807-599-2899

We hereby certify the following Assay of 13 ROCK samples submitted JUN-18-90 by .

Sample Number	Au oz/ton	Au check oz/ton	Ag oz/ton
3451	Nil		0.27
3452	Nil		0.13
3453	0.002	0.002	0.20
3454	Nil		0.26
3455	Nil		1.69
3456	Nil		0.01
3457	Nil		0.01
3458	Nil		0.01
3459	0.002	0.002	0.06
3460	Nil		0.02
3461	Nil		0.05
3462	Nil		0.01
3463	Nil		0.01

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705) 642-3244. FAX (705)642-3300

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Assay Certificate

OW-1107-RA1

Company: **NIPIGON GOLD RESOURCES**

Date: AUG-08-90

Project:

Copy 1. BROOKLYN PARK,MINNESOTA. U.S.A.

Attn: MAX REITER

2. FAX TO (807)599-2899 & 612-424-1174

We hereby certify the following Assay of 1 ROCK samples submitted AUG-02-90 by .

Sample Number	Au oz/ton	Ag oz/ton	Cu %	Zn %
P-NA-C-1	Nil	0.01	0.005	0.01

Certified by G. Lebel

G. Lebel / Manager

P.O. Box 10, Swastika, Ontario P0K 1T0

Telephone (705) 642-3244. FAX (705)642-3300

NIPIGON GOLD RESOURCES LTD.

Metallurgical Study

MacKenzie-Gray Vein

Mine Centre, Ontario
February 1, 1990

AURORA RESEARCH
4 Vata Court, Unit 10
Aurora, Ontario L4G 4B6
Canada

February 1, 1991

A. S. Hayden, P.Eng.

G. A. Tibbs, P.Eng.

REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

SUMMARY AND CONCLUSIONS

Two lots of samples from a stockpile of mineralized material from the MacKenzie-Gray Vein were received for metallurgical testing. Each lot consisted of four 18L plastic pails and represent a stockpile of approximately 1000 tons of 3/4" material.

The purpose of the study was to define flotation characteristic of the mineralization. Results of preliminary work suggested bulk, rather than differential flotation, was appropriate for the material submitted for study.

Tests 4 and 6 are pertinent to treatment of the material submitted, and are reported in detail herein.

Gold recovery in Test 4 reached 94.83% at a grind of 76.9% minus 200 mesh. Test 6 was done on material ground to 55.6% minus 200 mesh, and gave a gold recovery of 84.64%.

SAMPLE DESCRIPTION

The samples submitted for testwork were taken from a stockpile of material from the MacKenzie-Gray Vein. This material was taken from an open cut on the vein, crushed to nominal 3/4" and stacked near to the mill site from where it could be moved by front-end loader to the feed hopper of the gravity plant set up during August, 1990.

The 3/4" material was sampled by taking approximately ~1kg portions from the surface of the pile after stacking. Sample locations were evenly, but randomly distributed. A total of four 18L pails were filled directly in this manner, and mixed thoroughly on receipt in our laboratory. One quarter of the material was reduced to -10 mesh in a Denver 10" X 12" crushing rolls, and sub-sampled for determination of head grade by assay.

The second sampling of the stock pile involved cutting trenches into the heap and removing ~1kg portions selected randomly from the walls of the trenches. A total of four 18L pails were filled and shipped to our laboratory, where 18L were selected for further crushing to -10 mesh, sampled to provide an estimate of head grade and 1kg portions cut out for flotation tests.

The second sampling appears to have been most representative of the stockpile having been taken in a more three-dimensional fashion than the first. The flotation tests reported herein were done on material from the second sampling.

The samples consisted of vein and wall rock that contain quartz, minor carbonate, with pyrite, sphalerite, minor galena, chalcopyrite, and traces of secondary iron and copper minerals.

ANALYSES OF SAMPLES OF STOCKPILE - MACKENZIE-GRAY VEIN

Element	Sample 1	Sample 2	Sample 2A	Sample 3A
Au oz/ton	0.17	0.16	0.092	0.093
Ag ppm	20	12	20.6	19.9
Cu%	0.13	0.12	0.12	0.12
Zn%	2.18	2.06	1.65	1.66
Pb%			0.02	0.02

TESTWORK

Testwork requested included only studies to determine if the material would respond favorably to flotation. We did not determine grinding power requirements but were provided with an estimate given by a third party who had examined samples of the ore.

Gravity testing of the MacKenzie-Gray Vein material was done on site during September and October, 1990. This work confirmed that as much as 50% of the contained gold was associated with fine sphalerite which was difficult to recover on the Wilfley table.

Each 1kg sample tested was ground in a 10" diameter steel bottle with a 10kg charge of graded small steel balls (1/2" to 2" diameter), and one liter of water. Test 4 material was ground for 20 minutes, and test 6 material was ground for 15 minutes.

Results of both tests are given in the following pages.

Nipigon Gold Float Test # 4 Bulk Flotation

Grind: 76.9 % -200 mesh

Conditions:

Stage	CuSO4 g/t	A350 g/t	MIBC mL/t	Cond'n min	Float min	pH
Condition	200			3		7.5
Rougher 1		50	40	2	5	
Rougher 2		25		1	5	
Rougher 3					5	
Rougher 4		25		1	5	

Results:

	Weight		Gold		Silver		Copper		Zinc		Lead	
Product	Grams	%	oz/ton	% Dist'n	oz/ton	% Dist'n	%	% Dist'n	%	% Dist'n	%	% Dist'n
Rougher 1	44.45	4.45	1.81	66.93	10.49	72.69	1.99	70.37	34.28	90.83	.71	76.18
Rougher 2	17.11	1.71	1.02	14.52	5.54	14.78	1.14	15.52	2.23	2.27	.22	9.09
Rougher 3	5.25	.53	.19	.83	2.04	1.67	.52	2.17	1.36	.43	.09	1.14
Rougher 4	5.51	.55	2.52	11.55	4.23	3.63	1.04	4.56	1.18	.39	.18	2.39
Rougher Tail	927.7	92.77	.008	6.17	.05	7.23	.01	7.38	.11	6.08	.005	11.20
Calc. Head	1000.0	100	.120	100	.641	100	.126	100	1.678	100	.041	100
Rougher 1+2		6.16	1.59	81.45	9.11	87.47	1.75	85.89	25.37	93.10	.57	85.27
Rougher 1-3		6.68	1.48	82.28	8.56	89.14	1.66	88.06	23.49	93.53	.54	86.41
Rougher 1-4		7.23	1.56	93.83	8.23	92.77	1.61	92.62	21.79	93.92	.51	88.80

Project: Nipigon

Screen Analysis, Test no.: 4
, Sample : Rougher Tails

Microns	Mesh (Tyler)	Grams	%	Cum. % Passing
589	28			
417	35			
250	60			
208	65	.30	.1	99.9
147	100	1.60	.7	99.2
104	150	13.70	5.6	93.6
74	200	41.10	16.8	76.9
-74	-200	188.50	76.9	100.0
Total		245.20	100.0	

Nipigon Gold Float Test # 6 Bulk Flotation

Grind: 55.6 % -200 mesh

Conditions:

Stage	CuSO4 g/t	A350 g/t	MIBC mL/t	Cond'n min	Float min	pH
Condition	200			3		8
Rougher 1		50	20	2	5	
Rougher 2		50		1	5	
Rougher 3		50	20	1	5	

Results:

	Weight		Gold		Silver		Copper		Zinc		Lead	
Product	Grams	%	oz/ton	% Dist'n	oz/ton	% Dist'n	%	% Dist'n	%	% Dist'n	%	% Dist'n
Rougher 1	32.2	3.22	1.01	35.68	12.02	56.71	2.06	49.99	42.92	74.48	.53	54.55
Rougher 2	23.83	2.38	1.39	36.34	9.53	33.27	1.71	30.71	14.18	18.21	.3	22.85
Rougher 3	10.45	1.05	1.1	12.61	5.65	8.65	1.11	8.74	3.15	1.77	.23	7.68
Rougher Tail	933.5	93.35	.015	15.36	.01	1.37	.015	10.55	.11	5.53	.005	14.92
Calc. Head	1000.0	100	.091	100	.683	100	.133	100	1.856	100	.031	100
Rougher 1+2		5.60	1.17	72.02	10.96	89.98	1.91	80.70	30.70	92.69	.43	77.40
Rougher 1-3		6.65	1.16	84.64	10.13	98.63	1.79	89.45	26.37	94.47	.40	85.08

Project: Nipigon

Screen Analysis, Test no.: 6
, Sample : Rougher Tails

Microns	Mesh (Tyler)	Grams	%	Cum. % Passing
589	28			
417	35			
250	60	1.10	.6	99.5
208	65	6.40	3.2	96.3
147	100	20.30	10.2	86.1
104	150	32.00	16.0	70.1
74	200	29.00	14.5	55.6
-74	-200	111.20	55.6	100.0
Total		200.00	100.0	

SUMMARY REPORT FOR PROPOSED WORK PROJECT MCKENZIE-GRAY PROPERTY

FROM

THE QUALIFYING REPORT

PREPARED BY R.A. BERNATCHEZ, P.ENG.

SUMMARY

The author was commissioned by Joseph D. Strauss, President and C.E.O. of Nipigon Gold Resources Ltd., to write a qualifying geological report on the company's McKenzie-Gray and West Rock claim groups totalling thirty-two (32)unleased mining claims located in the Mine Centre area of Northwestern Ontario, in the Kenora Mining Division of Ontario, 290 kilometres west of Thunder Bay, Ontario, and 70 kilometres east of International Falls, Minnesota, U.S.A. The property is located approximately 6.5 kilometres west southwest of Mine Centre on Highway 11, and 1 kilometre west of Shoal Lake.

The property is located near the southern edge of the Wabigoon subprovince, within a sequence of mafic to gabbroic and anorthositic intrusive rocks and felsic intrusive rocks. Minor volcanic and sedimentary rocks are located on the southern edge of the property. The above rock formations form part of a sigmoidal lens-shaped sequence of mafic, intermediate and felsic volcanic rocks, clastic sedimentary rocks and mafic to gabbroic to anorthositic intrusive rocks and felsic intrusive rocks, all of Archean age.

The volcanic and sedimentary rocks form part of the Atikokan-Fort Frances volcanic sedimentary sequence of rocks located at the southern edge of the Wabigoon subprovince. The mafic to anorthositic intrusion rock on the property forms part of the southeastern edge of the Bad Vermilion Lake mafic stock. The felsic intrusive forms the southwestern portion of the Bad Vermilion felsic intrusion locally known as a tonalite. The whole of the above rocks are bounded to the south by the Seine River-Rainy Lake fault and to the north by the Quetico fault. The Quetico gneissic sedimentary rocks are located south of the Seine River-Rainy River fault and form a portion of the northern edge of the Quetico subprovince. The Irene-Eltrut Lake batholithic complex form the rocks north of the Quetico fault.

The formation of the Quetico and Seine River-Rainy Lake fault zones has produced many secondary structures within the rocks bounded by the two major structures. These secondary structures have been the host environment for much of the gold-bearing solutions and have been host to most of the major past producing gold mines in the area. Total past gold production between the period of 1893 to 1956 (Schnieders and Dutka 1985) amounted to 710,400 grams (20,720 oz) of gold at an average grade of 14.7 g/t (0.43 oz Au/ton).

The Mine Centre area also has potential for base metal Zn-Cu and Cu-Ni deposits as well as iron-titanium deposits. The mafic to felsic volcanic rocks east, northwest and west of Bad Vermilion Lake are the host rocks for the Zn-Cu deposits whereas the gabbro-anorthositic intrusive rocks are favourable for the Cu-Ni and iron-titanium deposits.

It is reported that the McKenzie-Gray showing was discovered in 1926 by Bankfield Consolidated Mines Ltd. and was known then as the Richmore property. The vein was trenched, sampled and drilled by Bankfield. Information from old maps indicate that the surface sampling on McKenzie-Gray vein assays 16.1 g/t (0.47 oz Au/ton), along a length of 83.3 metres (270 feet) across a width of 1.1 metres (3.56 feet). Diamond drilling by Bankfield averaged 15.1 g Au/t (0.44 oz Au/ton).

Subsequent work by Steep Rock Resources Inc., Corporation Falconbridge Copper (C.F.C.) and Nipigon Gold Resources Ltd. confirmed the high grade nature of the McKenzie-Gray vein. Since 1985, however, work performed by C.F.C. and Nipigon Gold Resources has confirmed the presence of other parallel veins in the immediate area of the McKenzie-Gray vein such as indicated in drill hole L-10 and sampling by Nipigon Gold Resources a few metres west of the McKenzie-Gray vein. Further work in the form of drilling, stripping and channel sampling is required to test these new parallel veins.

The McKenzie-Gray vein area has responded well to induced polarization surveys carried out by Steep Rock Resources Inc. in 1983-84. Other similar anomalies were detected southeast, northeast and west of the McKenzie-Gray vein. The correlation of these I.P. anomalies with corresponding magnetic and humus gold geochem anomalies make these I.P. anomalies prime target areas for further gold mineralization. Subsequent EM-VLF and magnetic surveys on the property performed by Steep Rock Resources have also detected numerous electromagnetic and magnetic anomalies on strike with the Finger Lake shear zone where gold, silver and molybdenum are known to occur.

Most previous work performed on the property has been concentrated on the McKenzie-Gray vein. Recent work done by Steep Rock Resources, Sherritt-Gordon Mines and Nipigon Gold Resources has identified other areas within the present property boundary with structures hosting gold mineralization. Very minor exploratory work has been done to evaluate these new gold-bearing areas.

It is for the above-mentioned reason and the results obtained on the McKenzie-Gray vein area that the author strongly recommends a program of additional exploratory work on the property. This program should consist of diamond drilling, line cutting, geological mapping, geophysical surveys, prospecting, mechanical stripping, trenching and sampling to the amount of $ 306,750.00.

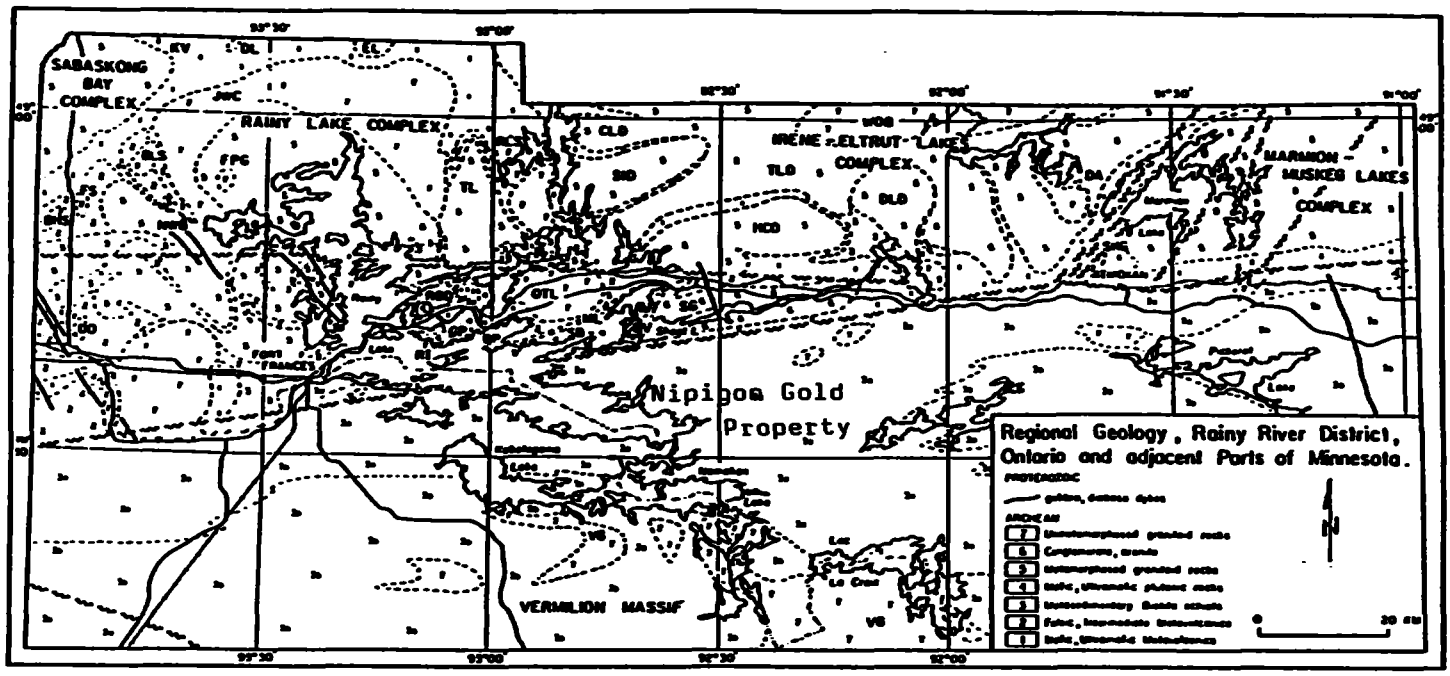


Fig. 4 Regional Geology, Rainy River District. Compiled from mapping by the Ontario Geological Survey and Minnesota Geological Survey.

OTL Ottertail Stock

ML Mud Lake Intrusion

BP Bears Passage Intrusion

BV Bad Vermilion Intrusion

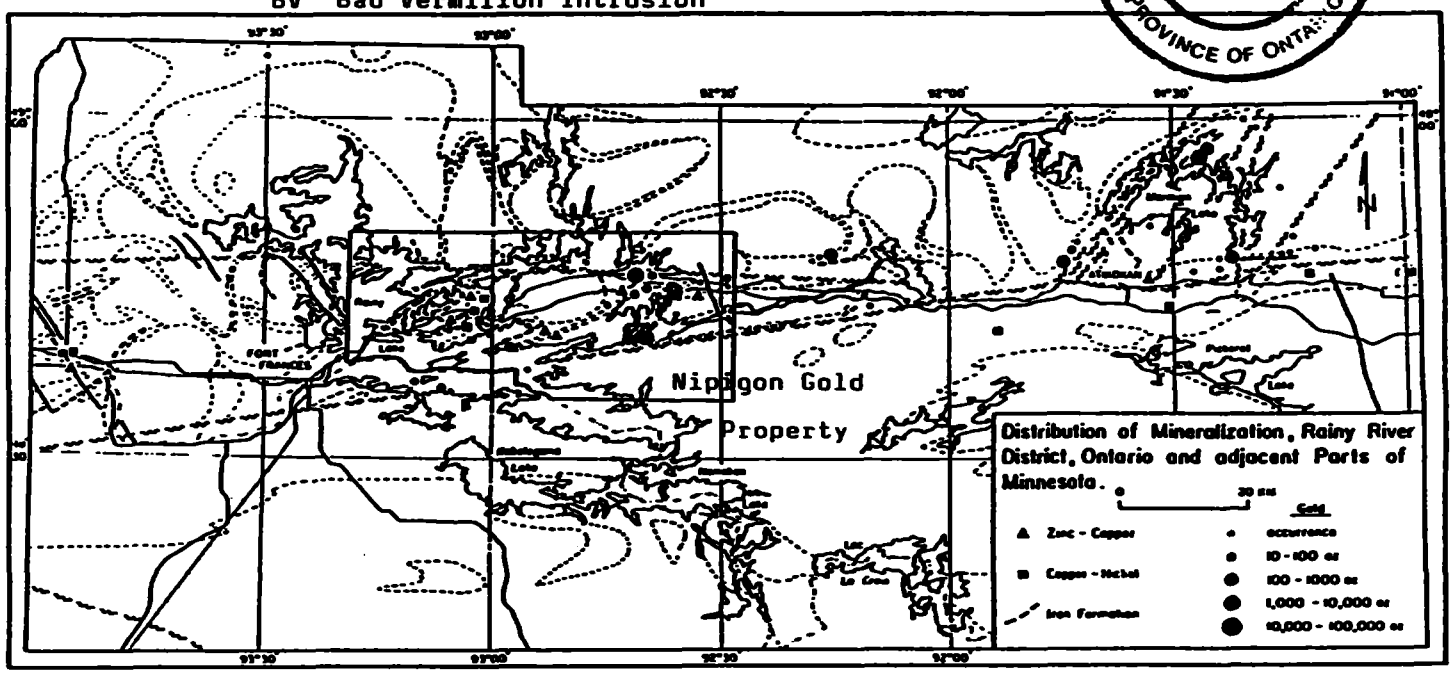


Fig. 5 Distribution of Mineralization, Atikokan-Fort Frances Area, Rainy River District.

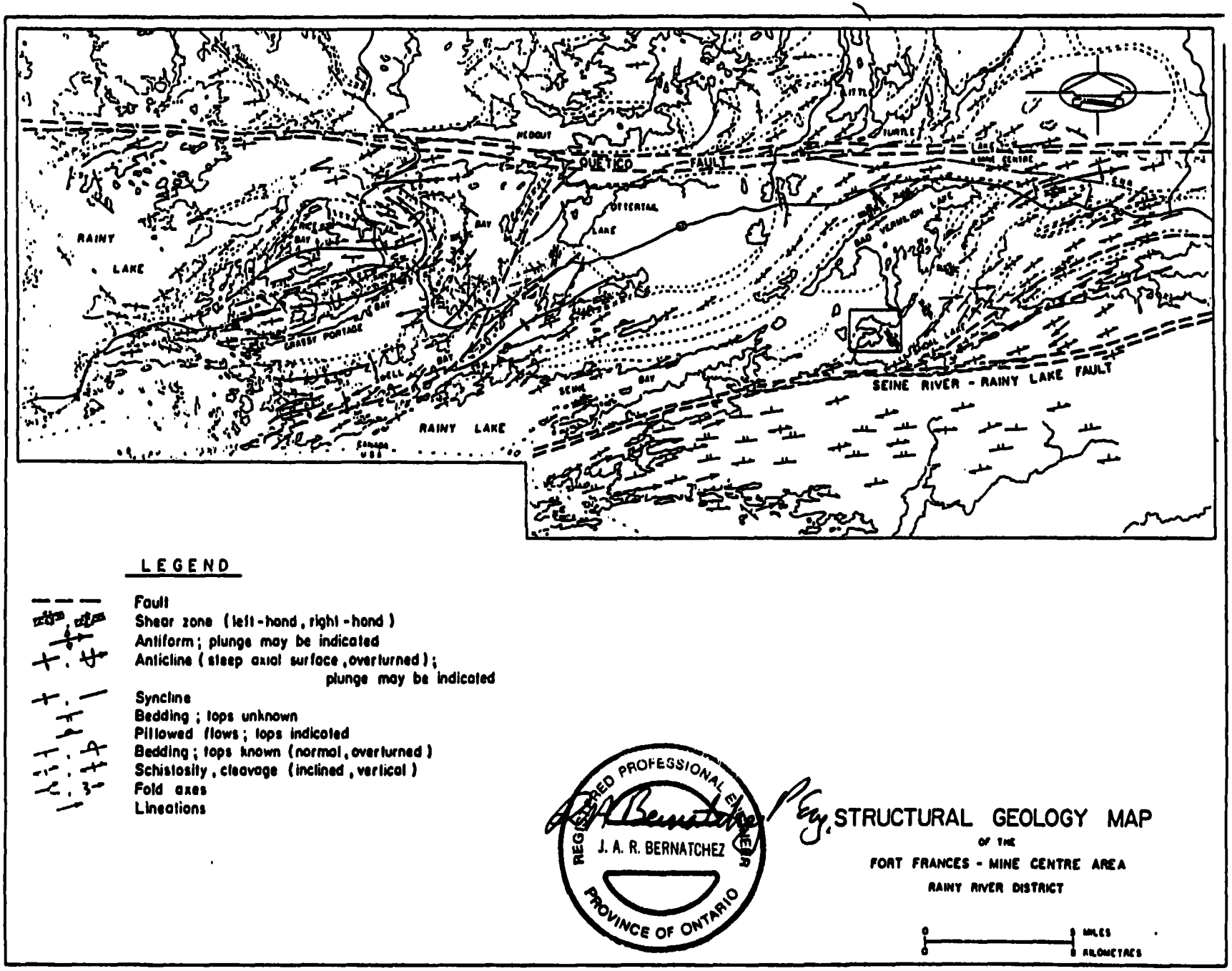


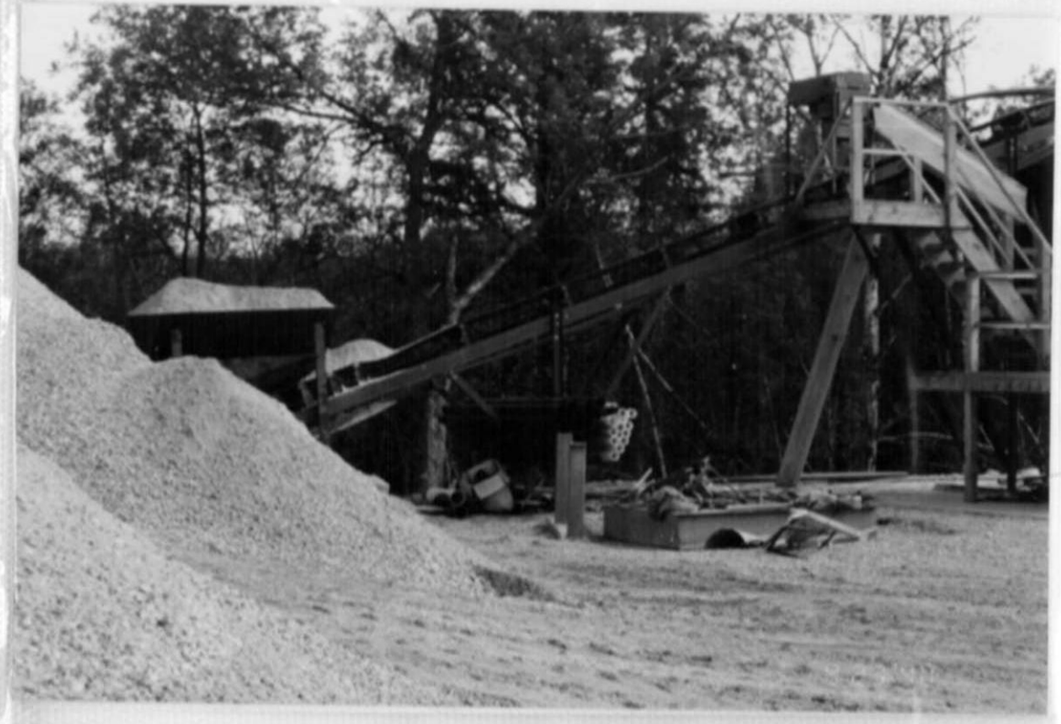
Fig. 3 Summary structural geology map, Mine Centre-Fort Frances area. Poulsen (1984)

OMIP 90-173

900

THIS SUBMITTAL CONSISTED OF VARIOUS REPORTS. SOME OF WHICH HAVE BEEN CULLED FROM THIS FILE. THE CULLED MATERIAL HAD BEEN PREVIOUSLY SUBMITTED UNDER THE FOLLOWING RECORD SERIES (THE DOCUMENTS CAN BE VIEWED IN THESE SERIES):

Report on A High Sensitivity Magnetic and VLF-EM Airborne Survey on Mckenzie - Grey Property and Turtle River Property for Nipigon Gold Resources by Terraquest Ltd, June 6, 1990 → see file # 2.13404 RAW # W9001.085

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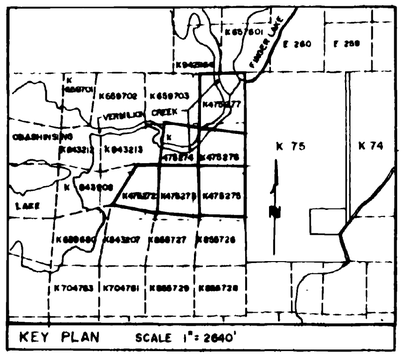
190D LC

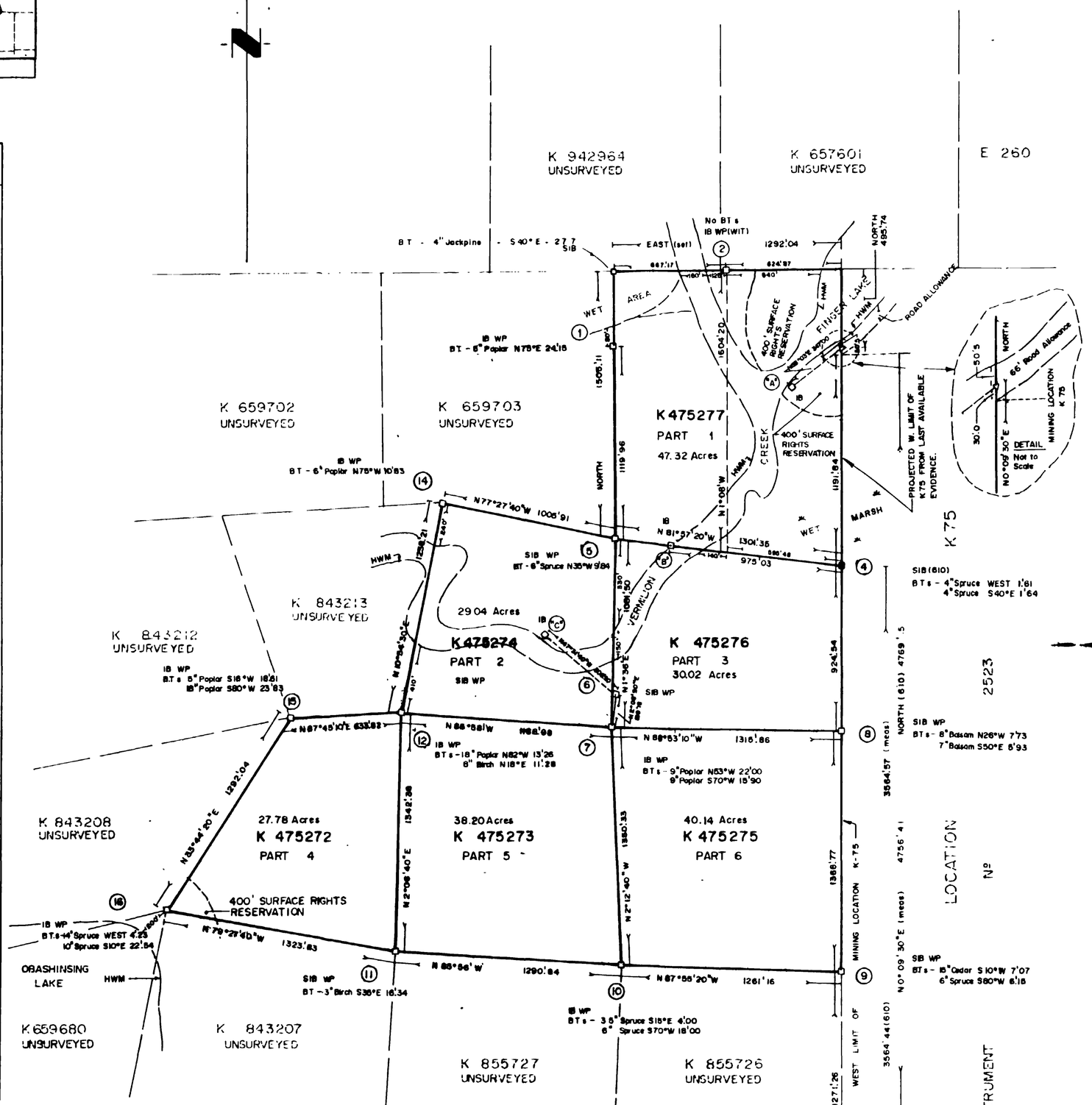

NIPIGON GOLD RESOURCES LTD.
MARKER GRAY PROJECT
DANGER



KEY PLAN SCALE 1" = 2640'

VERMILION CREEK AND FINGER LAKE STADIA TIES			
STATION	AZIMUTH	N/S	S/S
"A"			
1	190°		520'
2	196°		680'
3	201°		610'
4	204°		650'
5	213°	385'	150'
6	235°	298'	72'
7	272°	350'	48'
8	294°	502'	35' 208'
9	304°	650'	40' 395'
10	315°	140'	40'
11	0°	170'	40'
12	8°	250'	65'
13	20°	410'	
14	14°	680'	
15	38°		240'
"B"			
1	45°	600'	
2	48°	403'	
3	55°	238'	
4	97°	10'	
5	233°	151'	
6	222°	333'	
7	214°	568'	
8	215°	700'	
9	135°		115'
10	170°		148'
11	190°		231'
12	200°		405'
13	203°		670'
"C"			
1	90°	355'	510'
2	104°	260'	460'
3	138°	115'	280'
4	170°	48'	182'
5	210°	30'	160'
6	261°	42'	255' 603'
7	264°		700'
8	274°	452' 548'	
9	280°	625'	801'
10	291°	620'	760'
11	300°	620'	790'
12	310°	850' 602'	
13	319°	650'	

NOTE: N/S — DENOTES NORTH SIDE OF CREEK/LAKE
S/S — DENOTES SOUTH SIDE OF CREEK/LAKE



AREA SCHEDULE (Acres)						
PART	MINING CLAIM	WATER	RESERVE	REMAINING LAND	TOTAL ACRES	TOTAL HECTARES
1	K 475277	8.68	6.25	32.39	47.32	19.149
2	K 475274	4.92		24.12	29.04	11.752
3	K 475276	2.02		28.00	30.02	12.148
4	K 475272		0.69	27.09	27.78	11.242
5	K 475273				38.20	15.459
6	K 475275				40.14	16.244
	MINING AND SURFACE RIGHTS				212.50	85.994

PLAN 48R - 3078

RECEIVED AND DEPOSITED
90-04-30
DATE

C.L. Rutherford
LAND REGISTRAR FOR THE LAND TITLES DIVISION OF RAINY RIVER

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

J. Maskell
APL FINOS, SURVEYOR GENERAL, MINISTRY OF NATURAL RESOURCES.

April 10, 1990
DATE

63.6107

PLAN AND FIELD NOTES OF

MINING CLAIMS K475272, K475273, K475274, K475275, K475276 AND K475277

IN THE BAD VERMILION LAKE AREA
DISTRICT OF RAINY RIVER

SCALE: 1" = 400'

B. MASKELL LIMITED
ONTARIO LAND SURVEYORS
1989

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY:

1. THAT THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE MINING ACT, THE LAND TITLES ACT AND THE REGULATIONS MADE THEREUNDER.
2. THAT I WAS PRESENT AT AND DID PERSONALLY SUPERVISE THE SURVEY REPRESENTED BY THIS PLAN.
3. THAT THIS PLAN CONTAINS A TRUE COPY OF THE FIELD NOTES OF SURVEY.
4. THAT THE SURVEY WAS COMPLETED ON THE 5th DAY OF APRIL, 1989.

November 21, 1989
DATE
THUNDER BAY, ONTARIO

B. MASKELL
ONTARIO LAND SURVEYOR

CONFLICTION CERTIFICATE

I HEREBY CERTIFY THAT I HAVE CAREFULLY EXAMINED THE GROUND INCLUDED IN MINING CLAIMS K475272, K475273, K475274, K475275, K475276 AND K475277 SURVEYED BY ME AND HAVE OTHERWISE MADE ALL REASONABLE INVESTIGATIONS IN MY POWER TO ASCERTAIN IF THERE WAS ANY OTHER SUBSISTING CLAIM CONFLICTING THEREWITH AND I CERTIFY THAT I FOUND NO TRACE OR INDICATION AND HAVE NO KNOWLEDGE OR INFORMATION OF ANY SUCH MINING CLAIM.

B. MASKELL
ONTARIO LAND SURVEYOR

LEGEND

IB	DENOTES	IRON BAR
BT	DENOTES	BEARING TREE
WS	DENOTES	WOOD STAKE
WIT	DENOTES	WITNESS
WP	DENOTES	WOODEN GUIDE POST
SIB	DENOTES	STANDARD IRON BAR
610	DENOTES	S.G. HANCOCK, O.L.S. SURVEY DATE NOVEMBER 12, 1970
998	DENOTES	G.J. WEGMAN, O.L.S.
□	DENOTES	SURVEY MONUMENT SET
■	DENOTES	SURVEY MONUMENT FOUND

NOTE

BEARINGS ARE ASTRONOMIC AND ARE DERIVED FROM AN OBSERVATION ON THE SUN AND ARE REFERRED TO THE MERIDIAN THROUGH STATION No. 11.

CAUTION

THIS PLAN IS NOT A PLAN OF SUBDIVISION WITHIN THE MEANING OF THE PLANNING ACT.

52C10NE0003 63.6107 BAD VERMILION LAKE

200

ORDER No 2375
FILE NO 194987
EXAMINED BY K

Proposed New Drill Targets (Jolly Roger)

K475274

BL 2400S

BL 2400E

K1082353

K475276

M.H.

McKenzie-Gray Off set vein.

Proposed New Drill Targets (main vein) K475275

East Vein

AREA OF HUMUS GOLD GEOCHEM SURVEY BY SHERRITT GORDON MINES (1981)

Pilot Plant

K475272

Big John Vein

K475273

McKenzie-Gray Vein

N

SYMBOLS

- L-3 CFC Diamond Drill Holes
- I.P Chargeability Anomalies, low, high
- M.H Magnetic High Anomalies
- qv Quartz veining
- Humus Geochem Gold Anomalies
- Pit or trench
- Bulldozer stripping area
- Zn, Pb Soil Geochem Zn, Pb Anomalies

REGISTERED PROFESSIONAL R. A. R. BERNATCHEZ PROVINCE OF ONTARIO

R.A. Bernatchez P.Eng.

MAP No. 3

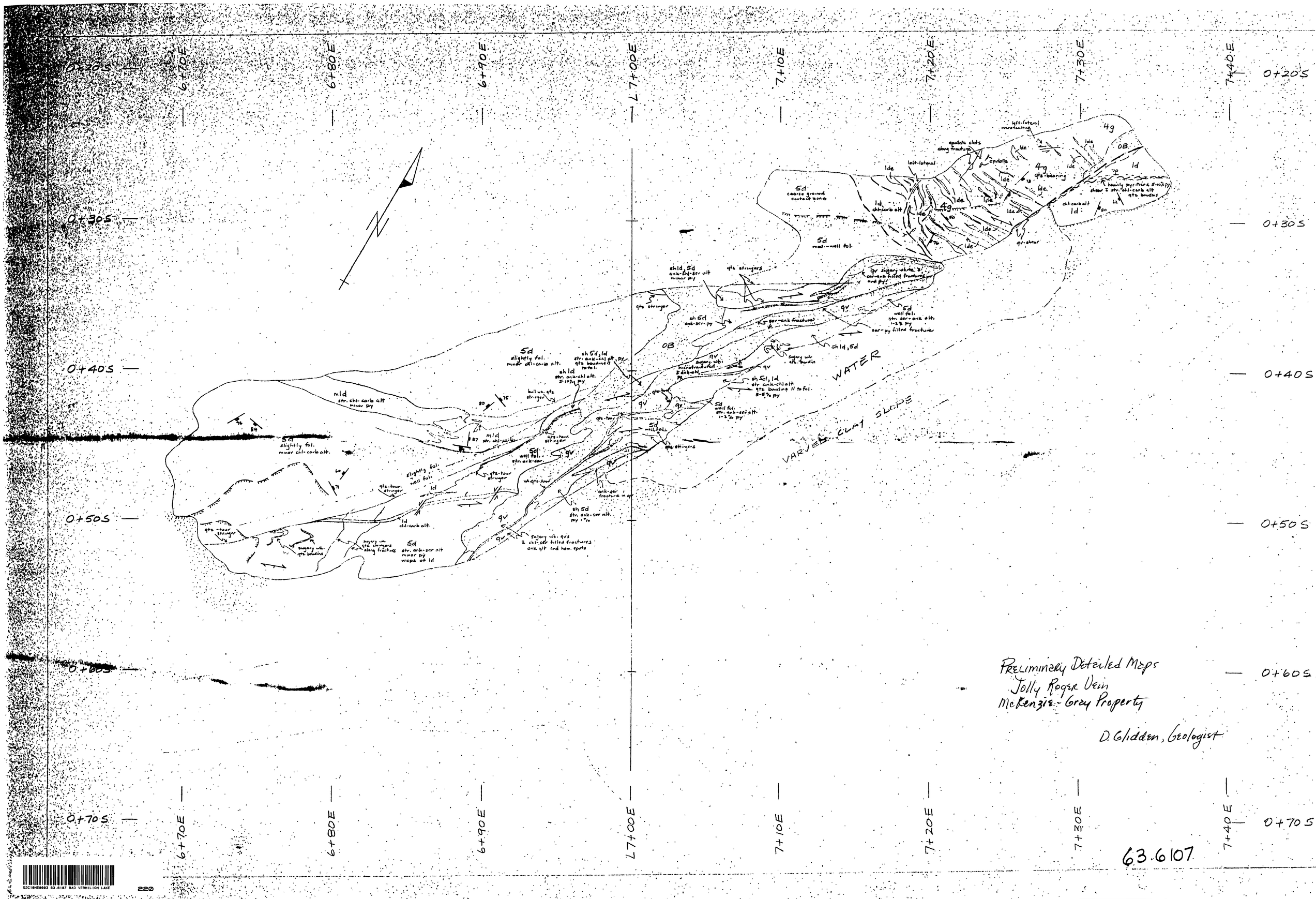
NIPIGON GOLD RESOURCES,LTD

MINE CENTRE PROPERTY

Mc Kenzie - Gray Group

Magnetic, I.P. Chargeability Anomalies
C.F.C. Diamond Drill Holes
Humus and Soil Geochem Anomalies

Scale: 1:2500	N.T.S 52/C -10
Date: March 20, 1989	By R.A. Bernatchez, P.Eng.



Preliminary Detailed Maps
Jolly Roger Vein
McKenzie-Gray Property

D. Glidden, Geologist

63.6107

Preliminary Detailed Maps
McKenzie - Grey
Six Block Claim

D. Glidden, Geologist

Scale: 1:1000

63.6107

2+75S

3+00S

3+25S

3+50S

3+75S

ROAD

WATER

OB

OB HILL

OB TRENCH

ORE PILE 1.5M HIGH

ORE PILE 2.5 M HIGH

WALL ROCK PILE 1.5M HIGH

ROCK PILE 1.5M

SAND PAD

OB FLAT TOP

ORE PILE 2M. HIGH

Preliminary Detailed Map
Main Vein —
McKenzie-Gatey Property

D. Glidden Geologist

63.6107

240