63.4402



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A REPORT ON THE
KENOGAMI LAKE GOLD PROPERTY
LARDER LAKE MINING DIVISION, ONTARIO
OF
HEMLO REEF RESOURCES, EBY GROUP

OM83-6-C-251

Dundas, Ontario
December 21, 1983

S. Carmichael, B.Sc.

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Summary

The Hemlo Reef Resources gold property, comprising 57 mining claims and 16 optioned patents was worked on by the author during the months of October, November, and December, 1983. The purpose of the work was to delineate a possible zone of sediments which may be conducive to syngenetic gold mineralization. The work consisted of geological mapping at scale of 1:5,000 metric and a proton magnetometer survey.

The property as a whole has never received detailed exploration work, although Sylvanite Gold Mines (1945) and Dominion Gulf Company (1952) carried out minor amounts of drilling at various locations on the property. Most of this drilling was completed for assessment work only and recommendations for further work were never carried out. The Ontario Geological Survey carried out a deep overburden drilling project during 1980/81 on the property and suggested that auriferous source area may be present on the property.

The rocks on the property consist of magnesium and iron tholeiitic basalts with interflow sediments including chert, iron formation, and chemical sediments. Numerous diabase dikes and lesser amounts of syenite also occur throughout the property. The Larder Lake 'Break' is postulated to occur on the property and provides a good exploration target as many gold mines throughout the area are associated with this structure.

Past exploration on the property has been limited due to lack of rock exposures, however, this author feels the property holds a very good potential and is a very attractive exploration target. A systematic program of geological mapping, geophysical surveys, humus sampling, and trenching is recommended, culminating in a drilling program.

A Report on the Kenogami Lake Gold Property

Larder Lake Mining Division, Ontario

of

Hemlo Reef Resources, Eby Group

Introduction

This report on the Hemlo Reef Resources Eby claim group has been prepared by S. J. Carmichael, B.Sc. Geology on behalf of Mr. R. J. Kasner, President of Hemlo Reef Resources. The property lies in the northwest quarter of Eby Township, Larker Lake Mining Division, District of Timiskaming, Ontario.

The purpose of this report is to summarize the work the author did on the property and to provide a framework for a systematic exploration program. It is suggested that parts of this report remain confidential until a full-scale exploration program on the property is initiated.

Property Location and Access

The property comprises 57 unpatented mining claims and 16 optioned patents covering an area of approximately 13.5km^2.

The property is situated in the northwest quarter of Eby Township, Ranges 4 and 5, lots 5 - 11, District of Timiskaming, Larder Lake Mining Division. The property may be reached by Highway 66, 16km southwest of the town of Kirkland Lake. A south concession road traverses the south border of the property and a trail suitable for motorcycle or all-terrain vehicles crosses the north part of the property. The central portion of the property may be reached by 4-wheel drive vehicle via a logging road which runs north off the south concession road at line 24+00W.

The land is generally of low relief with many swamps in the east and north. Up to 70% exposure occurs in the central part of the property where logging operations and subsequent erosion of the topsoil has left outcrops bare. A grub hoe and hand whisk are essential tools when working on the property.

Lake Kenogami lies north of the property and numerous creeks and swamps traverse the property providing abundant water for diamond drilling operations. Electrical power and infrastructure suitable for support of a mining operation are available at the mining centre of Kirkland Lake. There are no facilities on the property itself.

Previous Work Done

Due to lack of outcrop exposure, relatively little work has been done on the property considering its location and geological setting. Systematic geophysical and geological work has been carried out on only two sections of the property. The first was done by Sylvanite Gold Mines in 1945 on the present claims 616277, 618673-75, 640905-06, and 618676-78. Four holes were diamond drilled, one on claim 616277 and three on claim 618676. The first hole gave very interesting values, up to 0.2 oz/ton Au over 8'. The other three holes were drilled for assessment work and gave poor values. A grab sample from a pit showing 'green carbonate' on claim 18402 assayed 3.60 d wts (.18 oz/ton Au) and it was further reported that an extensive drilling program should be carried out on the north part of the property, drilling which was never carried out.

In 1952, Dominion Gulf Company held two claim groups, present numbers 640898-904, 640966 and 618673-75, 616277, 640905. The work consisted of a magnetometer survey, geological mapping and diamond drilling.

Two holes were drilled, one on claim 640904 and one on claim 640899. The purpose of the drilling was to locate the Larder Lake "Break" which is postulated to run through the north part of the property. No assay values were given from the drill core but the logs show that the drill on claim 640904 intersected "altered andesite with mariposite (fuchsite)" which may be green carbonate (chemical sediment). This rock type was also intersected in the drill core on claim 640899. In addition, the geological map included in the report shows "extensive carbonate alteration" on claims 640405 and 618674. It is the opinion of this author that rock types which have previously been termed carbonatized volcanics may in fact be sediments conducive to syngenetic stratiform gold mineralization.

The George Walters property (P 18356-57) was worked on in 1938, the work consisting of pitting and drilling. Although the information is sketchy, a bulk sample (amount of sample unknown) yielded assays of 2.74 oz/ton Au and 0.06 oz/ton Au. A drill hole under the pitted area failed to disclose "interesting values" (gold at $35/oz). In 1935, Erie Canadian Mines optioned the property and did a limited amount of work. A grab sample is reported to have given an assay value of $6.00/ton Au (gold at $35/oz).

In 1980 and 1981, the Ontario Geological Survey carried out a program of deep overburden drilling in the Kirkland Lake Area. Two holes were drilled on the north border of the property and two holes along the south border. The results were very encouraging and indicated that a gold source may lie on the property.

In 1983, an airborne geophysical survey consisting of magnetometer, V.L.F. and horizontal loop E.M. was carried out for Hemlo Reef Resources, the present owner of the property.

Present Work

Introduction

Hemlo Reef Resources employed the author in late October this year to map the geology and complete a magnetometer survey on the property, keeping in mind the notion that the genesis of gold mineralization in the Kirkland Lake area may be sedimentary in origin. Heavy snowfalls in late November prevented the author from completing the geological survey. Despite the early snow, the author was able to delineate a zone of chemical sediments conducive to gold mineralization, roughly one kilometer in strike length (open at either end) and at least 100 meters in width. Smaller zones of interflow sediments were found throughout the property, however, they are not of sufficient size to warrant further work.

At the time of this report, only 1/8 of the property has been mapped at a scale of 1:5,000 metric utilizing grid lines oriented north-south at 100 meter separation. The 200 meter separation did not permit detailed outcrop placement or geophysical interpretation, however, general trends of both surface geology and geophysics may be ascertained.

Geology

During the course of mapping, the author encountered four major different rock types. These include: 1) Basalt 2) Diabase dikes 3) iron Formation 4) Clastic and chemical sediments of the Larder Lake Group.

1) Basalt:

Both iron and magnesium tholeiites of the Larder Lake Group occur on the property, with iron tholeiites dominating to the north. They are generally fine to medium grained, dark green to black in colour, occasionally pillowed and flow brecciated. Insufficient exposure of the pillows did not allow a tops determination, however, the O.D.M. map #2239 indicates that flow tops face north where encountered on the south portion of the property. To the north, the flow tops face south indicating that a syncline may run through

the property, the axis of which is oriented east-west. Small zones of volcanic tuff were found, generally showing a porphyroblastic texture due to shearing and metamorphism on the property.

Small quartz and quartz/carbonate veins are common throughout the property. Where mineralized with sulfides, these veins may carry up to .02 oz/ton Au, however, they are generally barren of mineralization.

2) Diabase:

Numerous diabase dikes were found on the south portion of the property. They are generally three to five meters in width, magnetic, and strike either east-west or north-south. One large dike was found to have a porphyritic interior. However, generally the dikes are fine to medium grained showing a typical "diabasic" texture. They are void of mineralization although narrow hydrothermal contact areas may carry up to 10 - 15% sulfides. A sample from one of these contact areas returned only trace values of gold.

3) Iron Formation:

Three zones of iron formation were encountered on the property. The first is a narrow (50 cm wide) zone of hematite/chert iron formation bounded on either side by greywacke-type sediments. The zone strikes roughly north-west, dipping steeply south (located on line 26+00W, south of the baseline) but does not appear to be continuous for any great strike length. The zone is weakly magnetic and may not be traced by the magnetometer. The second zone is located north of the base-line on line 1+10W and consists of banded magnetite/hematite and volcanic tuff. This zone strikes north-west and is strongly magnetic. It appears to be faulted off between lines 1+00S and 2+00W with a left-hand lateral motion. The offset may be up to 300 meters, the fault striking roughly north-south.

The third zone is located approximately at 7+00W, north of the

north tie line (11+50N) and consists of hematite/magnetite and jasper. It is strongly magnetic and appears to be continuous for at least 200 meters (based on the magnetometer survey) and may continue of for another 200 meters (lines 12+00W - 16+00W, Howard Lovell, regional geologist, personal communication). This zone is an excellent marker horizon as it appears to lie within the main sedimentary sequence which may host gold mineralization. The strike of the formation is east-west, dipping steeply south.

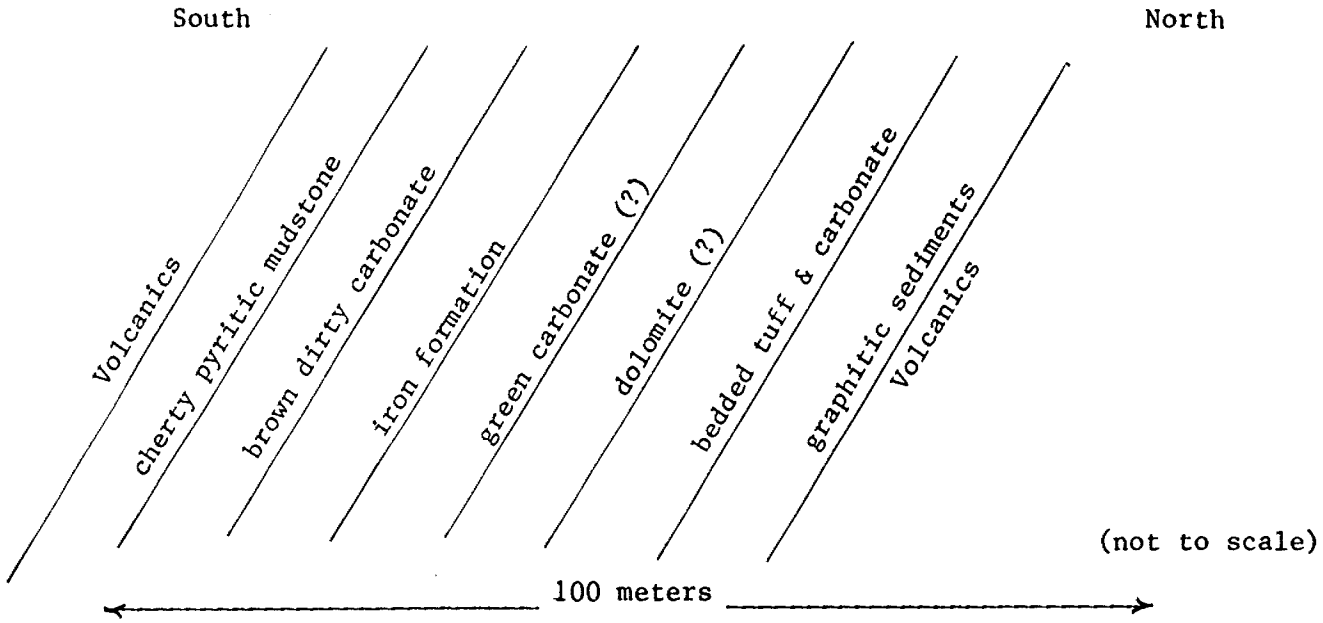
All of the above iron formations carry only trace values of gold mineralization (0.005 oz/ton Au maximum).

4) Sediments:

All sediments encountered during the course of mapping belong to the Larder Lake Group, although Timiskaming sediments occur to the north-west (the grid at this time does not extend that far west).

Small interflow zones of chert are common throughout the property, however, they are too narrow and discontinuous to warrant extensive work. Assays from these zones returned only trace values of gold.

An extensive zone of green carbonate, iron formation, dolomite and cherty mudstone appears to extend from the north-east (George Walters property) to Howard Lovell's property (1 km distance) and is in all likelihood open to both the east and west. Previously mapped as discontinuous zones of carbonatized volcanics, this zone may be interpreted as a sedimentary horizon exhibiting rocks of character similar to those found at the Mattachewan Consolidated Gold Mines to the west and the deposits near Larder Lake. Utilizing the theory that these are in fact sediments and not altered volcanics (Guy Hinse, personal communication) the author has delineated a zone roughly 100 meters wide and one (1) kilometer long which may contain gold mineralization. The rock sequence appears to be as follows:



This sequence of sediments strike roughly east-west and dip steeply south. Rock exposure is limited and the sequence is based on a combination of geophysical and geological interpretation. An airborne E.M. survey also tends to confirm the existance of a conductor over this rock sequence. The hanging wall cherty pyritic mudstone returned an assay value of 0.08 oz/ton Au (grab sample) whereas, the rest of the sequence returned lesser gold values. However, this type of mineralization is similar to that of Larder Lake (i.e., Omega Property).

Structure

All rocks encountered have been metamorphosed up to greenschist facies and have been tightly folded. Numerous shears were encountered and faults postulated. However, the 200 meter line separation does not allow a more detailed interpretation. The Larder Lake 'Break' is postulated to run through the north-west section of the property, however, the grid at this time does not extend that far to intersect the break. A major north-south left lateral fault appears to be located on the north-west part of

the property. This fault offsets both the carbonate sequence and iron formation a distance of up to 300 meters (based on geophysical data). Rock sequences to the north dip south while those to the south dip north, indicating that a syncline axis may run east-west through the property. However, much more extensive surface work is needed to confirm this.

Mineralization

Numerous pits and trenches were found during the coarse of mapping. Mineralization occurs in quartz and quartz/carbonate veins in basalt, interflow pyritic cherty sediments and in carbonates. The best gold values (0.08 oz/ton Au) occur in cherty banded pyritic mudstones on the hanging wall of the northern sedimentary sequence. The banding of the sulfides would indicate a stratiform origin.

Geophysics

A proton magnetometer survey was completed on grid lines spaced at 200 meters with stations every 12.5 meters. Two readings were taken every 100 meters to test the repeatability of the instrument. Diurnal fluctuations were corrected for by measuring a base station (0+00) every two or three hours. Diurnal fluctuations were found to vary no more than 30 - 40 gammas during the course of the survey. The results were then profiled in order to give a simplistic and factual representation of the property.

The extreme south portion of the property shows very little fluctuations in magnetics. Small localized peaks appear to be caused by diabase dikes which strike either east-west or north-south. North of the baseline the basaltic flows become more iron rich and take on a magnetic character. The two zones of iron formations are represented by sharp peaks and occur

on line 1+00W, 8+00W, 10+00W and 12+00W. The western-most iron formation is bounded on either side by magnetic lows and may represent sediments. The offsetting of the magnetometer highs between lines 1+00W and 2+00W may be caused by a north-south striking left lateral fault.

Conclusions

Although only a limited amount of time was spent in the field, a potential gold-bearing sedimentary sequence is postulated to occur in the north-east section of the property. This zone strikes roughly east-west for a probable distance of one (1) kilometer, open at either end and may be up to 100 meters or more in thickness. Rock types encounted in this area are similar to those which the author has viewed at the Mattachewan Consolidated Gold Mines occurrence, the Omega deposit in Larder Lake and the Kerr Addison Virginiatown deposit. This, in conjunction with the government till survey, makes this property a very attractive exploration target.

Recommendations

Lack of rock exposure on the property has limited exploration in the past. This is rather ironic considering the recommendations put forth by the work done by Dominion Gulf and Sylvanite Gold Mines, especially since the Larder Lake "Break" is thought to pass through the property and has always been a good exploration target from Mattachewan to Virginiatown. This author believes that the property warrants extensive exploration work to include the following:

1) The cutting of the grid should be completed as soon as possible with lines spaced at 100 meter intervals and 50 meter intervals north of the baseline.

2) The magnetometer survey should be completed utilizing 12.5 meter interval stations followed up by a more detailed survey if warranted.

3) A V.L.F. survey may prove useful in finding conductors in the sediments. An I.P. survey may be useful in finding zones of disseminated sulfide mineralization.

4) Geological mapping of the property should be completed at a scale of 1:2500 metric and 1:1000 metric over the sedimentary zone.

5) A humus geochemical survey would aid in pinpointing anomalous gold-bearing zones as indicated by the geophysical survey. Samples should be taken at 100 meter intervals over the sedimentary horizon.

6) Once potential gold mineralized zones have been found, a program of stripping and blasting followed by drilling should be initiated.

It is further recommended that the above program take place over a time interval of two (2) years, with stripping, trenching and drilling to take place in the second year.

Estimated Program Costs

Phase I

Line cutting - 60 miles	$16,500.00
Humus geochemical survey, 1,000 samples	15,000.00
Geophysical surveys, compilation, interpretation and supervision	25,000.00
Geological surveys, compilation, interpretation and supervision	
Total Phase I	$56,500.00

Phase II

Trenching and stripping	5,000.00
Diamond drilling - 300 meters	22,000.00
Analytical costs	1,000.00
Supervision	5,000.00
Total Phase II	$33,000.00

Total cost plus 10% contingencies $97,900.00

Should initial drilling results prove to be encouraging add $85,000.00 for added drilling.

December 21, 1983

Signed: S. Carmichael

S. J. Carmichael, B.Sc., Geology

Appendix I

Sample, Locations and Description

Sample #	Assay #	Grid Location	Assay Value oz/ton	Description
S.J.C.-1	0601	12+55W,12+60S	Nil	basalt with qtz/carb vein, trace sulfides
S.J.C.-2	0602	12+25W,12+50S	Nil	brecciated interflow chert, trace sulfides
S.J.C.-3	0603	14+00W, 5+35S	.005	qtz veins, trace sulfides
S.J.C.-4	0604	14+25W, 3+10S (float)	.002	hydrothermally altered volcanic, 6%py
S.J.C.-5		14+35W, 3+15S		porphyritic diabase
S.J.C.-6	0605	3+50W, 0+70S	Nil	interflow chert and possible carbonate
S.J.C.-7	0606	3+50W, 0+70S	Nil	as above with 10% sulfides
S.J.C -8	0607	3+95W, 1+80S	Nil	chert with epidote, 2% sulfides
S.J.C -9a	0608	3+95W, 1+80S	Nil	Chert with up to 10% sulfides
S.J.C -9b	0609	3+65W, 1+80S	Nil	chert with quartz veins
S.J.C -10	0610	26+25W, 5+90S	Nil	magnetite/hematite iron formation
S.J.C -11	0611	28+80W, 4+75N	.005	quartz vein with 5%py, spec. hem
S.J.C -12	0612	29+80W, 4+75N	.002	green carbonate, 15-20% fine sulfides
S.J.C -13	0613	29+80W, 4+75N	Nil	ankeritic sediment with qtz. vein
S.J.C -14	0614	6+50W,10+85N	.02	pyritic basalt with qtz. vein, 5-10% py
S.J.C -15	0615	7+50W,11+10N	.08	banded pyritic mudstone (?) with qtz, 30%py
S.J.C -16	0616	7+50W,11+10N	.005	same as above but with more chert
S.J.C -17	0617	7+50W,11+60N	.002	magnetite/chert iron formation
S.J.C -18	0618	7+50W,11+60N	.005	magnetite/jasper iron formation
S.J.C -19	0619	7+50W,11+60N	.002	sediments (?) 2%py
S.J.C -20	0620	1+40W, 9+75N	Nil	sheared volcanics 10-15%py
S.J.C -21	0621	1+25W, 9+75N	Nil	silicified volcanics (?)
S.J.C -22	0622	1+25W, 9+75N	Nil	same as above 10%py
S.J.C -23	0623	1+25W, 9+75N	Nil	sheared variolitic basalt

Sample #	Assay #	Grid Location	Assay Value oz/ton	Description
S.J.C -24	0624	1+25W, 9+75N	Nil	pyritic chert
S.J.C -25	0625	1+40W,13+10N	Nil	dirty green carbonate, trace py
S.J.C -26	0626	1+40W,12+60N	Nil	green carbonate with quartz, 2%py
S.J.C -27	0627	1+40W,12+60N	.01	dirty green carbonate, 5 - 10%py
S.J.C -28	0628	1+40W,12+60N	.002	light green carbonate, 5%py
S.J.C -29	0629	1+40W,12+60N	.002	laminated carbonate (mudstone)
S.J.C -30	0630	1+55W,13+10N	.03	green carbonate and tuff, 5%py
S.J.C -31	0631	1+25W, 7+00N	Nil	magnetite/chert iron formation
S.J.C -32	0632	6+65W,12+50N	Nil	tuffaceous volcanics, 3%py
S.J.C -33	0633	6+70W,12+35N	Nil	partially silicified sediments(?)
S.J.C -34	0634	6+55W,12+25N	Nil	pyritic chert, may be hydrothermal
S.J.C -35	0635	6+50W,12+15N	Nil	green carbonate, 4%py
S.J.C -36	0636	6+50W,12+15N	Nil	dirty sediment, possible volcanic
S.J.C -37	0637	6+60W,12+15N	.002	pyritic brecciated mudstone (?)
S.J.C -38	0638	6+75W,12+20N	Nil	'clean' green carbonate, 5%py
S.J.C -39	0639	7+00W,12+20N	.002	laminated tuff and mudstone, 10%py

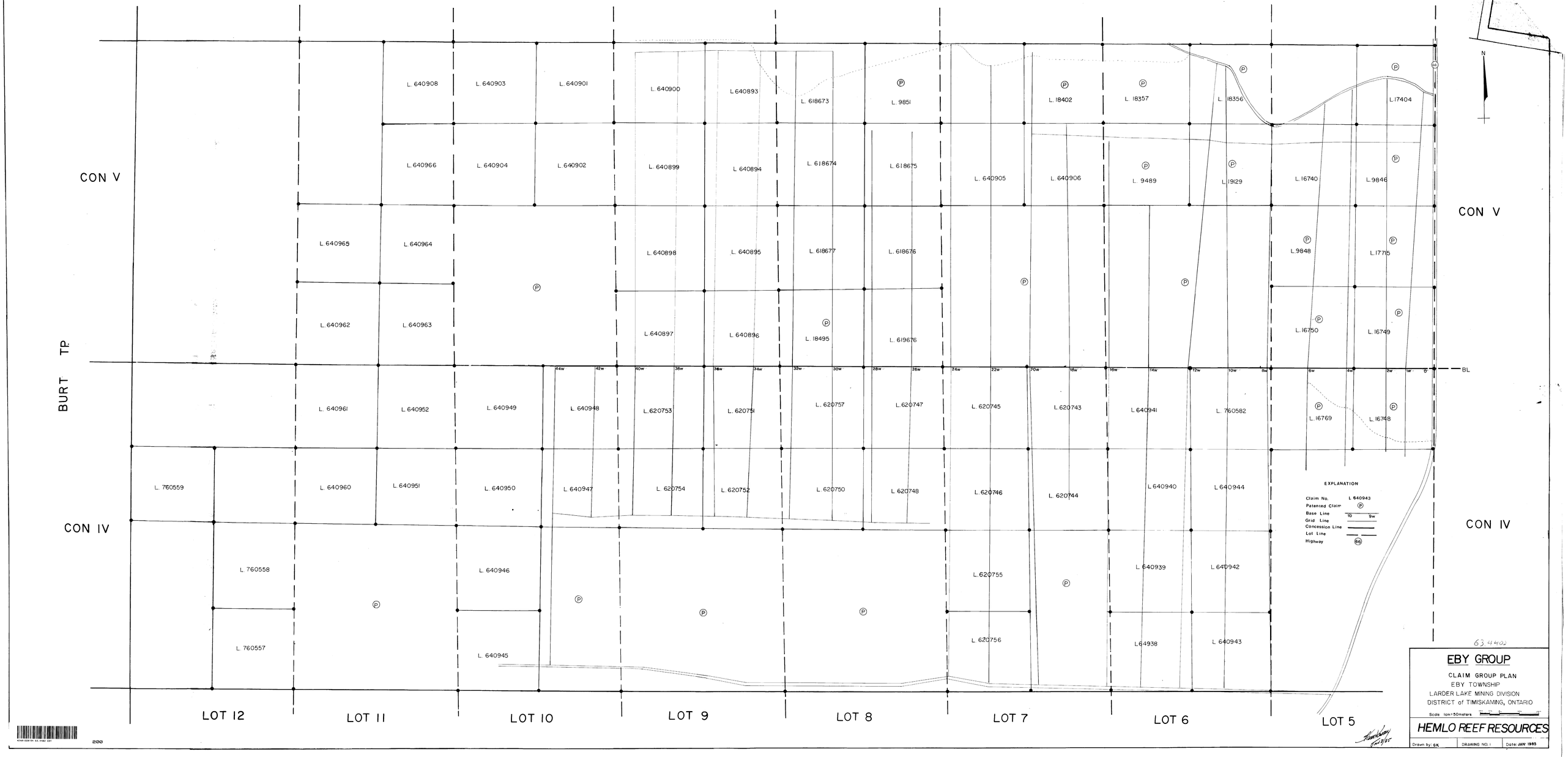
Appendix II

Hinse, G., 1983 — A Report on the Kenogami Lake Gold Property, Larder Lake Mining Division, Ontario, for R. J. Kasner; (Private Report).

Lovell, H.L., 1972 — Geology of Eby and Otto Area, District of Timiskaming, Ontario, Department of Mines and Northern Affairs, Geol. Report.

Routledge, R.E., Thomson, I., Thomson, I.S. and Dixon J.A., 1981 — Deep overburden drilling and geochemical sampling in Benoit, Melba, Bisley, Maisonville, Morrisette, Arnold, Grenfell, Lebel, Eby, Otto, Boston and McElroy Townships, Districts of Timiskaming and Cochrane: Ontario Geol. Survey, Open File Report 5356, pp.1-123

Other published and private geological maps and reports, Ontario Ministry of Natural Resources assesment files, Kirkland Lake, Ontario.



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EBY GROUP

CLAIM GROUP PLAN
EBY TOWNSHIP
LARDER LAKE MINING DIVISION
DISTRICT of TIMISKAMING, ONTARIO

Scale 1cm=50meters

HEMLO REEF RESOURCES

Drawn by: G.K. | DRAWING NO.: 1 | Date: JAN' 1985

2003

LEGEND

MAFIC VOLCANICS (basalt, tuff) — 1

SEDIMENTS (carbonates, mudstone, wacke) — 2

IRON FORMATION — I.F.

STRIKE and DIP of BEDDING

FAULT

DIABASE INTRUSSIVES — 3

ONTARIO GEOLOGICAL SURVEY BASIL TILL HOLES

KENOGAMI LAKE

Direction of glaciation

1945 Drilling by Sylvanite ave 0.50 oz/ton Au over 10'

best value 320 ppb Au (.009 oz/ton)

North Concession Road

LAKE BREAK

BI-02

BI-01

best value 40 ppb Au (.001 oz/ton)

PROJECTED LARDER

1938 Bulk Sample 2.71 oz./ton & 0.06 oz/ton Au

1983 Grab Sample 0.08 oz/ton Au

AREA NOT MAPPED

AREA NOT MAPPED

AREA NOT MAPPED

I.F.

80-25

South Concession Road

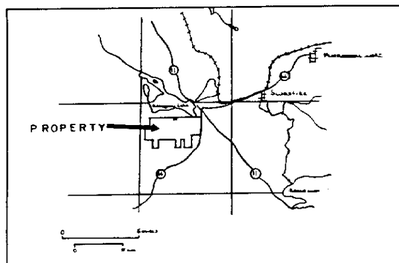
best value 2100 ppb Au (.06 oz/ton)

80-24

best value 2000 ppb Au (.058 oz/ton 4 pieces visible gold

Direction of glaciation

66



EBY GROUP

SURFACE GEOLOGY

EBY TOWNSHIP

LARDER LAKE MINING DIVISION

DISTRICT of TIMISKAMING, ONTARIO

Scale 1cm = 100 meters

HEMLO REEF RESOURCES

GEOLOGY BY: S. Carmichael | DRAWING NO. 1 | DATE June 23/83

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LEGEND

- Basalt V7 (a) diabasic (b) pillowed (c) flow brecciated (d) tuff
- Andesite V6
- Rhyolite V5
- Diabase I (d)
- Syenite I (s)
- Gabbro I (g)
- Chert S(ch)
- Argilite S(a)
- Greywacke S(g)
- Iron Formation S (if)
- Carbonate S (carb)

SYMBOLS

- Strike and dip of bedding
- Strike and dip of shearing
- Strike and dip of jointing
- Strike and dip of flow banding
- Anticline
- Syncline
- Direction of pillow tops
- Fault
- Geological (indicated) contact ——— assumed
- Outcrop boundary
- Outcrop exposed
- Small outcrop
- Pit
- Shaft
- Trench
- Variolites
- Hyaloclastite
- Glacial striae
- Brecciation
- Silicification
- porph. Porphyritic
- mag. Magnetite
- qv Quartz vein
- Py Pyrite

N

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SURFACE GEOLOGY
EBY TOWNSHIP
LARDER LAKE MINING DIVISION
DISTRICT of TIMISKAMING, ONTARIO

Scale 1cm = 50meters

HEMLO REEF RESOURCES

Geology by: S.J.C.	Drawing NO. 2	Date: Dec. 1983

220

230

N

63 440 E

ERY GROUP

MAGNETOMETER PROFILES
ERY TOWNSHIP
LARDER LAKE MINING DIVISION
DISTRICT of TIMISKAMING, ONTARIO
Scale 1"=100 metres

HEMLO REEF RESOURCES

Drawn by SJC	Drawing No 3	Date Dec 1983