El Sol Gold Mines Limited,
Suite 1003,
100 Adelaide Street West,
TORONTO, Ontario.

Gentlemen,

This is a geological report on a survey carried out on your iron property* at Kesaka Lake, Red Lake Mining Division, Northwestern Ontario, during the months of September and October, 1956, by the writer and helpers on behalf of Newkirk Mining Corporation.

Two geological maps (eastern and western sections) accompany this report and are on the scale of 200 feet to the inch.

The area mapped comprises the following 67 claims out of your 124 claim group:

K...L.39546 - 39558 incl. (13);
K.R.L.39524 - 39540 incl. (17);
K.R.L.39611 - 39614 incl. (4);
K.R.L.39587 - 39590 incl. (4);
K.R.L.39516 - 39521 incl. (6);
K.R.L.39573 - 39577 incl. (5);
K.R.L.39562 - 39564 incl. (3);
K.R.L.39511 - 39513 incl. (3);
K.R.L.39601 - 39603 incl. (3);
K.R.L.39617 - 39622 incl. (6);
K.R.L.39582
K.R.L.39595 - 39596 incl. (2);

Total: 67

Although, out of a recognized mining district, the property has had some interest shown. Approximately six or seven years ago, part had been staked by persons unknown. In the Spring of 1954, Mosher & Associates staked part of the property but no development work was done.

* See location plan back of report.

The present group was staked in July 1956 and to date a geological survey, and magnetometer survey have been completed on the above-mentioned claims. Presently a drilling programme is being carried out to ascertain the economic possibilities of the iron formation.

The property is included on the southeastern corner of the Ontario Government's Uchi Lake - Slate Lake map (No. 48g) made in 1939 by J.D. Bateman.

Traversing the eastern section of the property is a north-south government survey base line (1920) with marker posts every mile.

The present and most convenient access to the property is by air from Sioux Lookout, 65 miles distant*, and only takes 35 minutes. It is possible to travel by boat from Sioux Lookout and arrive within a few miles of the area via Lac Suel Lake, Wensaga River and Slate Lake. Also, there is a winter road from Gold Pines on the Red Lake Highway to a point 12 miles from Kesaka Lake at Uchi Lake.

CONCLUSIONS.

A number of magnetite outcrops were discovered on the property. The iron occurs as a hydrogenetic metamorphic deposit. The iron formation on the northwest shore of Kesaka Lake extends for a known length of 2,200 feet. It averages 50 to 60 feet in width and comprises the western end of a large "A" zone magnetometer anomaly** which is 2.7 miles in length. This was the only magnetite discovered below this anomaly. The surface

*/** See location plan.

...de i... 32.9% iron east of the ca...psite gradin... to 45.0% iron to the ...st at line 44 west. There appears to be no surface leaching as the same grade is obtained in the drilling. The iron deposit analysed so far is of the nonbessemer type, contains less than 1% titanium but is high in silica or in the order of 45%.

Prospectin... with the use of the dip needle has turned up a couple ...f other magnetite outcrops but these have been found to be lying under ...ry small anomalies (i.e. E zone). Also a rather large anomaly "B" was ...icked up on the south shore of Kesaka Lake and has been delineated by the ...magnetometer.

No mineral deposits other than the iron were discovered on the ...roperty by this survey.

RECOMMENDATIONS

An interesting magnetite outcrop near the west boundary is believed to be part of a belt of iron striking west along the north shore of Kepeka Lake which is a mile northwest of your property. This ground should be looked over immediately and staked if the size and extent of the iron looks promising.

With regard to drilling, it is recommended that the "A" zone be followed west into Kesaka Lake after freeze up to delimit the western extent of the iron belt and to determine also the relationship with the west end of the "A" zone. A number of holes at 800 foot intervals should be put down on the "A" zone in Kesaka Lake to test for the apparent lower grade to the east. Zone "C" should be drilled at line 16 west on the south shore of Kesaka Lake and then out into the lake.

It is recommended that a super dip needle be used in the winter over Kesaka Lake and/or a drilling cross section should be placed across the lake around the centre.

Finally, all occurrences of pyrite in the iron formation should be assayed for gold as the regional occurrence is quite erratic.

PHYSIOGRAPHY

The vegetation was delineated with alacrity, as the area consisted of 3 distinct groups. First of all, in the generally high topographical areas, spruce and moss flourished with little or no labrador tea bush. Secondly, the lower terrain contained spruce and bush with a great deal of labrador tea. Thirdly, the very low and swampy ground contained spruce and alder with two patches in the south of straight spruce swamp with no bush to speak of. Also observed were sporadic patches of birch, poplar and tamarack. The property has less than 1% bedrock exposed and this has imposed a great handicap in the interpretation of the geology.

The terrain is moderately rugged relative to the general topography of the Canadian Shield. There are two prominent hill-ridges, one north of Kesaka Lake and the other striking along east-west behind the campsite. At the west end of the latter ridge the elevation is approximately 100 feet above the lake and is at its highest where the diorite porphyry outcrops. The area south and east of Kesaka Lake is quite flat and the southern section has been described as a "provincial park". The Kesaka Lake elevation of 1,300 feet above sea level has been computed from the regional Government map and is no more than 30 feet in descrepancy.

The drainage is to the east from Kesaka Lake to Crossley Lake. The water runs off on the western section into Kesaka Lake, except the north-west where a small stream drains into Tepeka Lake. Also the southern sector egresses to Avis Lake. The area mapped contains one large lake, Kesaka Lake and the western portion of Crossley Lake. Also there are two smaller lakes. Altogether there are 480 acres of water out of 2,800 acres mapped.

Only one sign of glaciation was observed in the north-east section where glacial striations were exhibited, trending S45°W. However, it is apparent that glaciation has modified the terrain by the rounding of the hills. No prominent topographical breaks were observed from the airplane and also there seems to be no obvious or important connection between the topography and the underlying rock strata except that the hills, ridges and creeks trend in approximately the same direction as the rock morphology.

REGIONAL GEOLOGY *

The property is situated in the extreme south-eastern corner of the Ontario Uchi Lake - Slate Lake map (1" = ½ mile) constructed by J.D. Bateman in 1939.

Geologically the area consists of the predominantly sedimentary Slate Lake Series overlain unconformally by the prevading volcanic Uchi Lake Series. Both series have been folded and then intruded by differing ages of younger intrusive rocks. The region for 5 miles around Kesaka Lake is situated in the Slate Lake Series, while the Uchi Lake Series lie to the northwest and are of no concern.

The Slate Lake series is predominantly sedimentary and consists of the following formations and members:

Paragneiss, greywacke, biolite quartz schist.

Bedded amphibilite, hornblende greiss.

Greenstone.

Conglomerate.

Arkose, slate, sevicite schist.

Iron formation.

Quartzite, Mica Schist (Oldest).

The older intrusives are made up of granite porphyry (oldest) metagabbro, and amphibolite, while the younger plutonic rocks embody granite, (oldest) pegmatite, diorite, siliceous dykes and lamprophyre.

Structurally the S.L. Series region cannot be interpreted simply as the folding is complex and leaves a pattern that may be construed in different ways. The most striking morphological feature is the consistent east-west trend and vertical dip of the formations. Considering the vertical dip, the occurrence of two separate conglomerate beds and the fact that the fracture clearage is generally perpendicular to the bedding, then the area can be considered as an isoclinally folded region with the apparent pitch indicated to the west. In the field, due mainly to scarcity of outcrops, the lineation has not been verified too closely.

Although graded bedding is poor due to metamorphism and the tops and bottoms of beds are not indicated clearly, the stratipaphic sequence appears younger to the north. With this in mind and viewing the regional map, the structure would emerge as an anticline to the west of Kesaka Lake and a syncline to the east. This appears somewhat true regionally but locally the mapping has revealed the nose of a large cremulation in the vicinity of the Government Base line to the north.

Bateman also reports the regional offset of the iron formation to the southeast travelling in an easterly direction.

Of noteworthy significance is the assay report taken on a grab sample by the Bateman survey in 1939 on part of the iron formation at 18 chains north of post X1. on the Government Base line and shows the following:

Fe 31.30%
Si 41.73%
P 0.07%
Ti 0.14%

The Government survey also reported the following of the iron formation which transects the El Sol property; starting a short distance north of mile post X1. on the Government Base line, the iron formation has been traced 3 miles west and averages 500 feet wide with a very steep northerly dip.

PROPERTY GEOLOGY

Metasediments of the Slate Lake Series transgress the property with a regional strike of N75°E and dip vertically. Toward the east, the formations strike more east-west. The metasediments are made up of quartzitic mica schist, iron formation, paragnesis, conglomerate, and bedded amphibolite. Transecting these units are later basic intrusives gabbro, diorite porphyry and lamprophyre. The diorite occurs as a stock or boss and interdigitates the underlying sediments in the form of sills and dykes. Only a paucity of barren quartz veinlets were observed and no felsic intrusives discovered.

TABLE OF FORMATIONS

PRE-CAMBRIAN

TENTATIVE ORDER

Intrusives

Lamprophyre

Diorite Porphyry

Gabbro

Intrusive contact

Slate Lake Series

Bedded Amphibolite

Conglomerate

Paragneiss (Greywacke)

Iron Formation (Sil. Magnetite)

Quartzitic Mica Schist

LITHOLOGY AND ORE GENESIS

Quartzitic Mica Schist. The oldest member of the Slate Lake Series outcrops in only one place, just west of Kesaka Lake. The impure quartzitic rock exhibits typical schistose structure which is very uniform and no doubt represents the former bedding. The green colour and subsequent formation of mica minerals indicate the high impurity of the former sandstone. The composition is about 50% aphanitic quartz, 25% muscovite-sevicite, 15% chlorite, biotite, hornblende and 10% indistinguisable impurities.

Iron Formation.* A formation of intercalated siliceous magnetite, chert and argillaceous material striking N75°E and dipping vertically was observed and occurred as conformable long narrow lensical bodies viewed cross-sectionally. Three separate iron bodies were revealed and the most important zone occurred along the north-west shore of Kesaka Lake. Both ends of this body strike into the lake, and are geologically open, while the thickness varies from 50 to 100 feet.

Near the western boundary at 18 + 50 S on line 88 west a small outcrop of siliceous magnetite was discovered and represents a small body developed by the precipitation of the iron in one of the many irregular concavities on the basin floor. This body appears to have been formed during the same stratigraphic time unit as the first body.

In the vicinity of between lines 4 west and 8 west at 2,500 feet south there is exposed some low-grade (visual est. 16% Fe) iron formation of a different lithology. From the magnetometer work, this body appears as a

* A detailed map showing the occurrence of the rion formation at 200E of 1800S on line 32 west is included at the end of the report.

separate zone. Petrologically the iron formation here consists of rhythmical banding of argillaceous material, siliceous magnetite, bluish white chert. The striking feature of the facies here is the definite order of the repetitious bands; in other words the magnetite always has barren argillaceous material below and chert above. Iron north of Kesaka Lake did not occur in this particular fashion and although these two bodies are not circuitously linked, it appears that the formation as a whole, has a facies change to the east. This fact was also brought out in the examining of the zone along Kesaka Lake. From east to west, the formation changes from an interlaminated rock of the above-mentioned lithologic units to one of minor interlaminations, finer grain and higher concentration of siliceous magnetite. The assay values give the same conclusions, as channel and chip samples from the east end have average values of 31 and 32% iron, while 1,200 feet to the west, the values have increased to 41 and 45% iron. The iron outcrop on the west boundary appears to be of the same nature as those at line 44 west. It would appear then that the higher grade iron would be expected to the west. To the east it appears that the grade of iron drops as visual estimates of the two outcrops between line 8 west and line 4 west at 2,500 south, are in the order of 15% iron. One should bear in mind that the facies change to the east concomitant with lower grade of iron is quite probably a very local feature, especially considering the limited rock exposed for examination. Therefore the mining potentialities generally, cannot be said to be weak.

In general the iron formation* is interlaminated with varying amounts of bands composed of siliceous magnetite (predominates to the west) argillaceous material (predominates to the east) moderately magnetic argillaceous material and chert. About 50% of the argillaceous material has been metamorphosed to a fine-grained aggregate of the following visible minerals: Hornblende, garnet,

* See accompanying detailed map.

chlorite, chamosite and impurities. Some of the argillaceous material, was no doubt formed from the expulsion of the impurities from the chemical action of the iron and silica precipitation, while the rest is due to the lowering of the velocity of the moving water causing the suspended material to undergo deposition.

Structurally the rock has a well developed schistosity or bedding fissility, such that it appears in places to be a slate.

An environment of a contential lake basin with highlands in close proximity and containing ferruginous rocks is the probable site of the formation of iron and related rocks. The actual floor of the basin was fairly deep as no shallow water features were noted, as well as no colour alteration or signs of heavy oxidation. The absence of calcareous material, including siderite is indicative of non-shallow water deposition. The examination of the core from Drill Hole No. 1 shows very little amounts of calcite of which half have been introduced later as it transects the bedding. Some of the calcite is conformable and has been formed by the re-crystallization of calcareous impurities. Only one small belb of siderite and one of dolomite were identified.

The formation appears to be of hydrogenetic origin as opposed to a residual accumulation. The repetitious rhythmical banding is a clear indication of this, as is the limited amount of impurities present. The iron has been deposited mostly concomitant with the silica while a moderate amount of the silica has formed barren chert beds. The alternate beds of iron and silica reflect the depositional environment which oscillated from summer to winter conditions, causing the P.H. factor to change and ultimately to bring about the precipitation of the iron and silica at different times (with overlap), resulting in the rhythmical banding.

The iron was deposited either as geothite-limonite or hematite with subsequent intense regional thermal metamorphism converting the primary minerals to magnetite. This process of conversion is complete as only surficial hemmatite and limonite are present on the outcrops while none has been observed in the drill core.

The forces of diagenesis were generally dormant, although, a paucity of pisolitic octahedrons of magnetite were observed in the siliceous magnetite just east of the campsite.

The environment for the deposition of the iron formation comes closest to that of a deep land locked lake basin with an irregular floor full of concavities. This would explain the small separate iron belts revealed by the magnetometer survey. It would also account for a large enough region to accumulate the iron and therefore the extent and distribution of the iron has no definite local structural control from what has been seen so far.

The slaty appearance of the ferruginous deposit attests to the active part the metamorphism has played in its formation as well as bands of garnet and chamosite present in the argillaceous beds, and also the prominent schistose structure of the conglomerate.

Briefly then, the iron and silica were taken in to solution by surface waters of former low lying ferruginous rocks and carried out to the lake basin and precipitated in waves by the changing P.H. factor from summer to winter. Very small depositional changes caused the release of some argillaceous material held in suspension. The termination of this chemical process was brought about by the changing tectonic conditions producing uplift with subsequent deposition of rudaceous and arenaceous material. Then dehydration, consolidation and regional thermal metamorphism converted the primary iron minerals to magnetite.

PARAGNEISS

The most copious rock unit observed on the property was paragneiss. This dark grey fine to medium grain rock was essentially a biotite gneiss. The gneissosity was prominent and in places developed further to schistose structure. In a paucity of cases the orientation of the hornblende crystals was recorded. Exposed on top of the hill north of Kesaka Lake were patches of small oolitic grains of quartz. This is a truly sedimentary feature. On this same promontory, granitisation has been active with the growth of the feldspar, megascopically evident. Also noted were felsic veinlets occupying the fracture cleavage planes. The rock was considerably indurated along the fractures and the metasomatism of the host rock extended about an inch on either side.

A paucity of thin bedded dark aphanitic aggregates in the form of conformable lenses were observed from time to time, and these are believed to be argillite facies.

Compositionally the formation is made up of feldspar, quartz and mafic minerals with the latter predominating. Due to scarcity of outcrops, and absence of relicit structures, the rock could conceivably be a greenstone although in this area it is very siliceous and has a characteristic green colour. Conformable contacts, prominent gneissosity and high mafic content of the paragneiss are indicative of a greywacke.

CONGLOMERATE

Lying just north-west of Kesaka Lake is a 800 foot thick bed of conglomerate in an east-west trending hill. North-west of this again there is another bed of undelineated conglomerate. Structurally this member of the S.L. series lies conformable to the members on either side and has a very prominent gneissosity grading in places to schistosity where the

pebbles and cobbles are lacking. The schistosity in places appears slaty and with the orientation of giant size (6 inches) disk-like cobbles and development of garnet and chlorite, the intensity of the metamorphism is quite evident.

Megascopically the rucdaceous member has been synthesised from a diversified aggregate of cobbles and pebbles which have been cemented by a non-calcareous arnaceous material. The cobbles and pebbles have a characteristic prolate disk-like shape and have been formed mostly from sandstones and black chert, but other rock types were observed. Infrequently a few magnetitic pebbles were noted. The disk-like cobbles averaged from 3 to 4 inches long and a ½ inch in width, with some lengths up to 6 and 7 inches. Generally the black, more compact cobbles, are smaller in size than the buff-coloured ones, which is to be expected. The disk-like shape of the composite parts indicates a lake shore origin. The high iron content in the matrix affords a moderate rusty stain on the weathered surface. The origin of the magnetitic prolate pebbles is somewhat dubious. They might have come from the associated iron formation which would leave an hiatus between the iron deposit and the overlying rock structure. This could be possible, but lack of outcrops makes it unclarifiable.

BEDDED AMPHIBOLITE

A ridge of dark green coarse amphibolite transects line 7200 east and 300 north. Structurally the formation is well foliated due to the orientation of the prismatic hornblende crystals. The foliation has the appearance of a bedded sediment and is composed of 75% hornblende.

DIORITE PORPHRY

Outcropping in the western section of the property is a dark green porphyritic rock. The highest hill in the region, just north-west of Kesaka Lake is capped by this igneous intrusive. The most prominent feature is the hornblende phenocrysts which appear very egregious on the weathered surface. In places the basic intrusive has been metamorphosed to a metadiorite especially south and southwest of the capped hill. In one case the diorite was observed as a sill and in another as a dyke. Generally the rock occurs as a stock or boss.

Mineralogically, the porphyry is composed of 50% feldspar and 50% mafic minerals. The feldspars are divided about half potassium and half plagioclose while the mafic group is composed of 35% hornblende and 15% chlorite, biotite and quartz.

GABBRO

Only one outcrop of this basic intrusive was discovered and is situated at 4400 south on line 4 west. The rock featured a dark medium grained porphyritic texture. Coarse grained subhedral labradorite embedded in an aphanitic mesostasis, of which biotite was the only mineral distinguishable, made up the porphyritic texture. The outcropping appeared fresh and unfractured and belongs to the group of older intrusives of the region.

LAMPROPHYRE DYKE

Transecting the iron formation at line 4 west 2500 south and 100 feet west was a fine-grained, dark massive dyke. It was found to be 8 feet long and 4 to 8 inches wide. The only mineral identified was fine grained flakes of biotite.

STRUCTURE

The metasediments of the Slate Lake Lines have a prominent bedding which coincides with the well developed regional foliation and therefore should be termed bedding foliation. The regional strike of N75°E varies in places notably to the east where it trends more east-west and even somewhat south of east. It is therefore assumed that a nose of a large crenalation exists approximately centred about the Government Base line to the north. To the far west, the rocks trend once again east-west and it is believed that the property is situated on a large gentle cymoidal fold which is on the east limb of a geanticline to the west. What limited folding and fracturing that was observed tends to indicate the above conclusion.

The vertical homocline might easily be a series of isoclinal folds as the beds dip vertically, the fracture cleavage is perpendicular to the bedding and a second formation of conglomerate outcrops to the north with the same strike and dip. The lack of outcrop makes it difficult to verify this conclusion.

The facies change of the conglomerate from a few fine pebbles on the south contact to rudaceous in the centre and north indicates the sedimentation was to the north.

The iron formation as a marker horizon is not too well delineated as it appears to occur in a series of belts within the formation. The gneissic conglomerate is another marker bed but the lack of outcropping has limited its known distribution.

The fracturing and shearing of the rocks is definitely connected with the folding as no indication of faulting was observed or inferred.

ECONOMIC GEOLOGY

The interpretation of the magnetometer survey was somewhat handicapped by the scarcity of bedrock exposures. The survey revealed two large magnetic zones "A" and "B" with a number of small belts also discovered. A few very small anomalies mapped but undesignated, represent in the cases north of Kesaka Lake the concentration of magnetic inclusions in the conglomerate. The "E" Anomaly lies over two iron formation outcrops which showed visual low-grade iron content. It is probably that the other separate belts have formed under the same sedimentation and will likely contain low grade iron. Attention is then focussed on the two large Anomalies "A" and "B". The "A" Anomaly has an average width of 400 feet and length of 2.7 miles. Drilling and field surveying indicates the actual width of the iron to be in the order of 50 to 60 feet with the whole zone in places extending up to 100 feet. The west end of "A" zone has been traced into Kesaka Lake and linked up to "B" Zone by the dip needle. Likewise, the "A" Zone has been traced across the lake by dip needle as has the "B" Zone. Since the "A" and "B" Zones are actually one, this large two limb anomaly might possibly be a huge continuous isoclinal fold plunging vertical or to the west.

Of interest is the undesignated anomaly on the west boundary. Here good "grade looking" magnetite was observed in a small outcrop (20' 10' 5').

It is concluded then, that all anomalies be over the iron formation except the very small ones which represent to the north magnetic includions in the conglomerate and to the south probably iron mineral concentrations in the intrusive gabbro. The small anomalies

"D", "E", "G" and "F" will be found to contain too low a tonnage to mine but Anomaly "C" should not be overlooked as it is open to the west where it was traced by dip needle into Lake Kesaka.

The iron formation north of Kesaka Lake shows an average grade of 32% iron, 45% silica; .25% phosphorous (nonbessemer type); .1% sulphur, and less than 1% titanium, as determined from surface samples. This grade is being maintained in the drilling and should increase to the west and decrease to the east. The depth possibilities are good with the probability of continuity along dip for at least 500 to 1000 feet on the two large zones. Also there is a good chance that the formation will widen with depth.

The general economics of the region are propitious to mining. At present transportation is by air, but water freight is feasible via Lac Suel and Wensaga River, and Slate Lake to within 3 miles of the west boundary*. The period of water movement would be approximately of 7 months duration. At present there is an old winter road to Uchi Lake 12 miles northwest of the property and the main Canadian National Railway runs east-west through Sioux Lookout, 65 miles to the south.

The availability of electrical power is good as a line extends up north from Ear Falls at Gold Pines to Uchi Lake and then across to Pickle Lake. It is understood that the capacity of the Ear Falls powersite is presently being increased.

The daily train service from Winnipeg to Sioux Lookout makes for a prompt source of labour and general supplies. The C.N.R. also maintains a thrice weekly service to the Lakehead.

* See location plan.

There is no shortage of water and the possibility of draining Kesaka Lake is good. The lake is quite shallow and the water would need to be pumped only a few thousand feet toward either Crossley Lake to the east or Avis Lake to the south.

The availability of gas power looks promising. Iron Bay Mines 40 miles to the southwest have a contract for a natural gas pipe line to their property and in view of the high silica content in the iron deposit it is quite possible that a new type reduction process requiring a great deal of heat may have to be used to separate and upgrade the ore value.

SURVEY DATA

The geological survey reported here within was carried out by the writer and helpers on behalf of Newkirk Mining Corporation, during the period August 25th to October 15th 1956, and the results are shown on two geological plans (eastern and western section) accompanying this report.

The detailed geological mapping was carried out over base lines and picket lines. The base lines were cut one mile apart and turned off by transit from a Government Survey base line which transects the eastern part of the property. Picket lines were turned off at 400 foot intervals by board from a base line and tie into the base line where it comes out.

A total of 8,011.5 feet were cut on the north base line, 2,729.5 feet on the Government Survey base line (grown over), and 8,376 feet of picket lines (44W, 40W, 36W, 32W, to the south of North base line to Kesaka Lake). The rest of the line cutting was done by A. Trotter and is recorded in the magnetometer survey report by Geo-Technical Development Company of Toronto. A total of 54.7 miles of line was geologically surveyed.

The number of 8-hour man days required to complete this work is as follows:

	8-hour Man Days	Attributable to Assessment work
Line cutting, transit and chaining	31 x 4	124
Geological survey	77 x 4	308
Stripping and trenching	9 x 4	36
Drafting	10 x 4	40
Report writing	5 x 4	20
Typing	2 x 4	8
	134	536

Respectfully submitted,

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

W.R. Montgomery

W.R. Montgomery, B.Sc.,
Geologist.

References: Bateman J.D. (1940): Geology and Gold Deposits of the Uchi-Slate Lake Area, Ontario. Dept. of Mines, Vol. XLVIII, Part VIII, 1939.

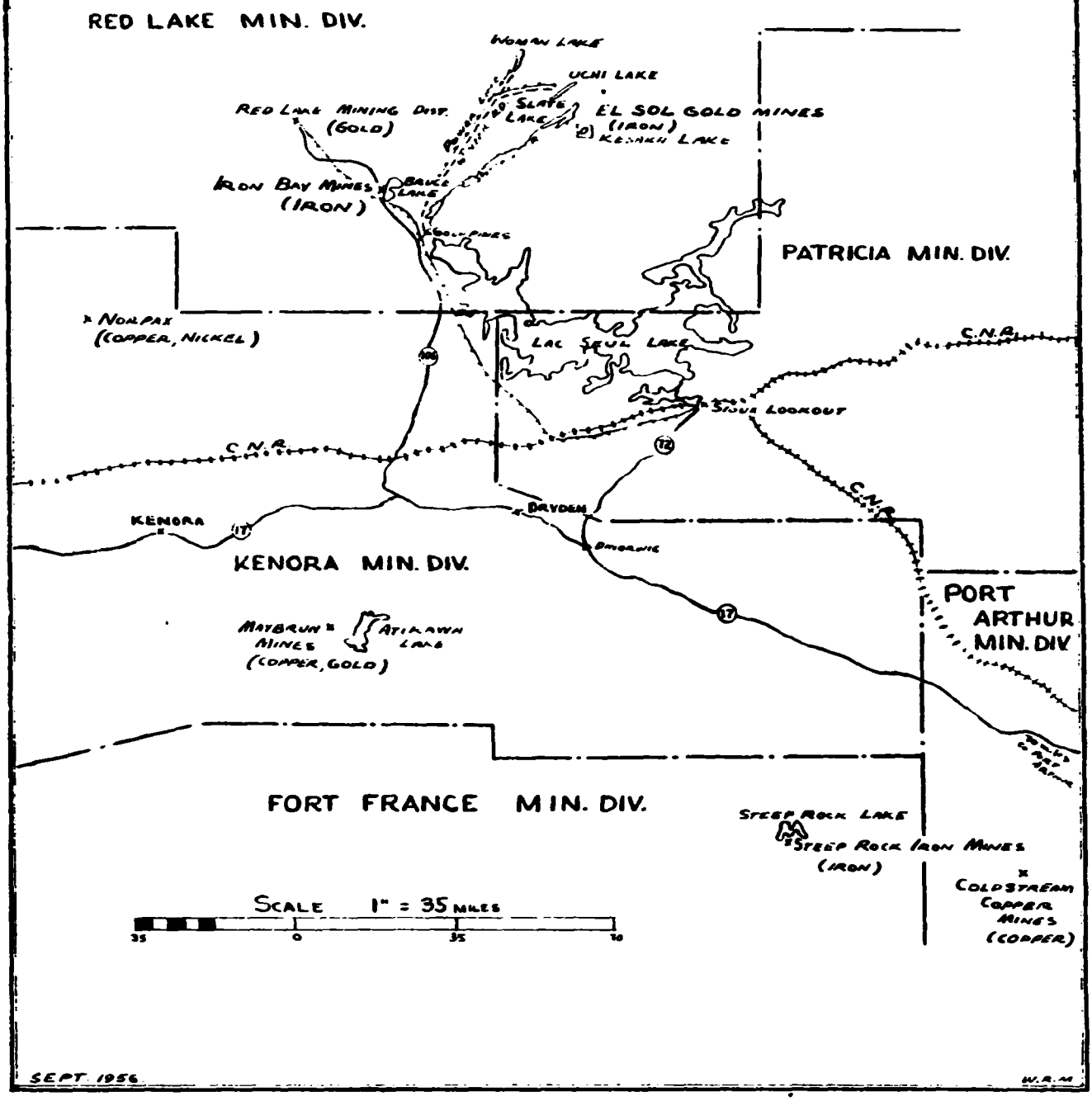
Toronto, Ontario.
8th November, 1956.

WRM-mc.

LOCATION PLAN

EL SOL GOLD MINES

KESAKA LAKE, NORTHWEST ONT.

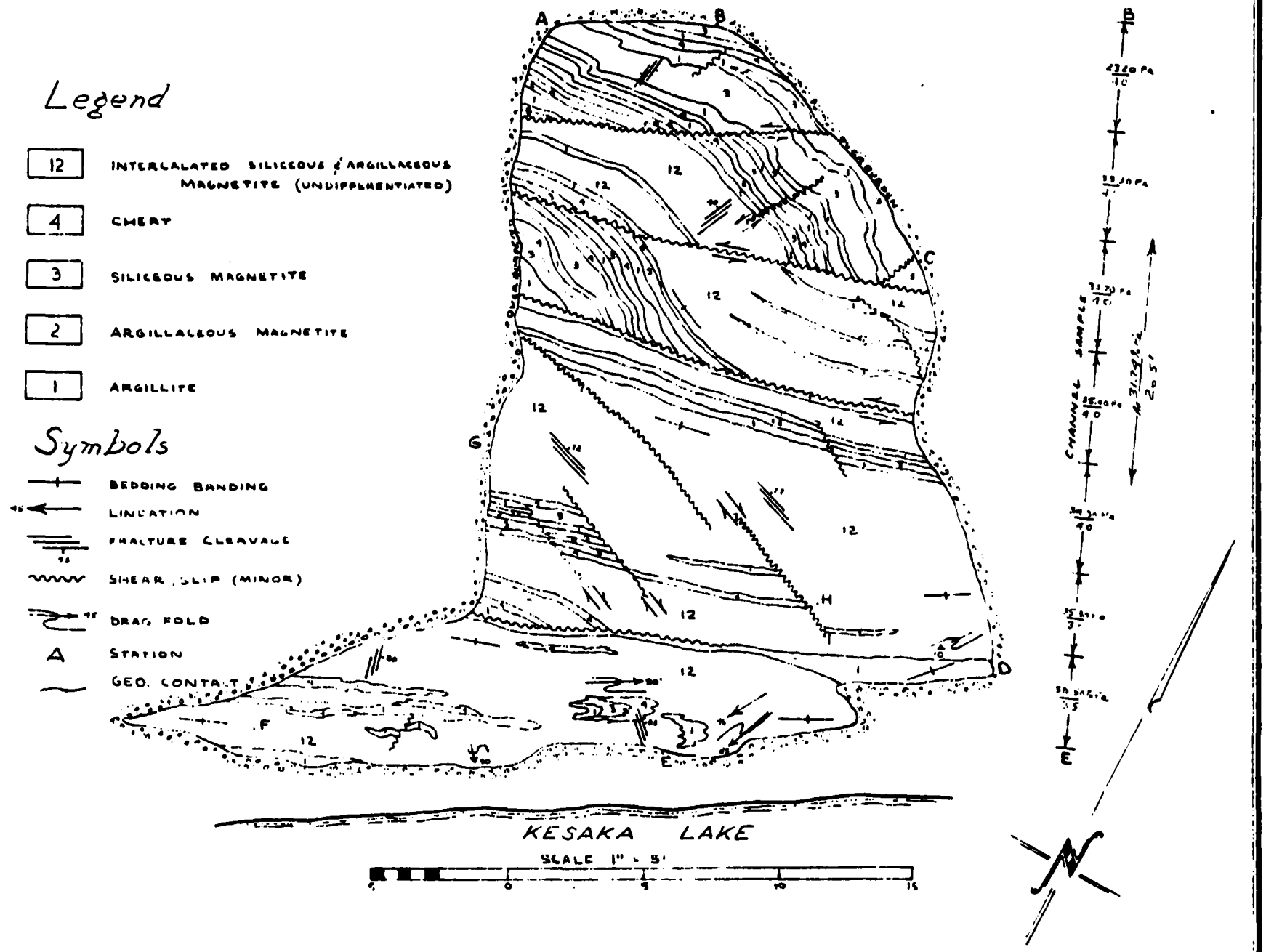


EL SOL GOLD MINES LTD.

MAGNETITE SHOWING No. 1.

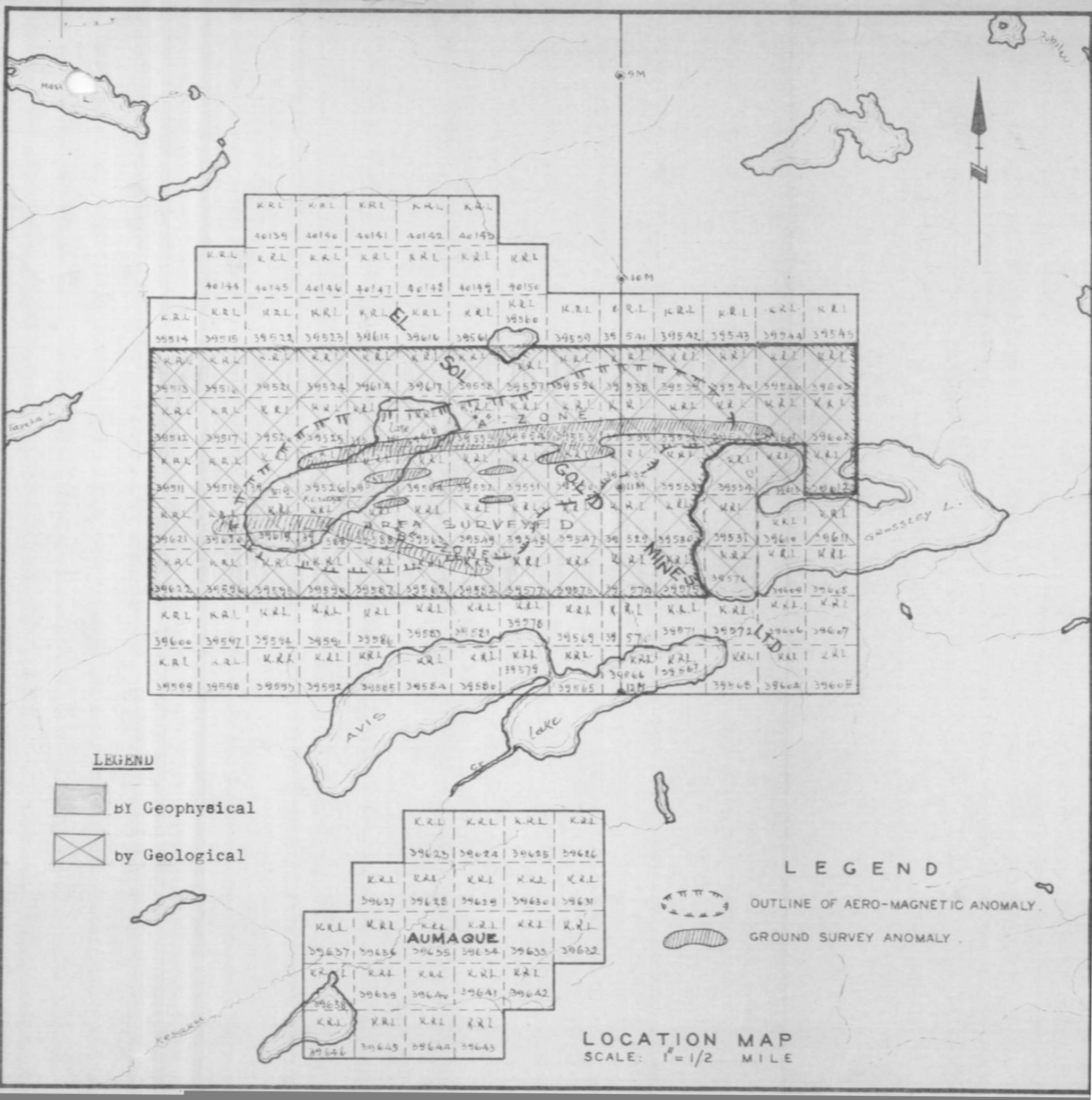
KESAKA LAKE

RED LAKE MINING DIV., ONTARIO



SEPT. 1956.

W.R.M.


EL SOL
A - ZONE
GOLD
AREA SURVEYED
B - ZONE
MINES
AUMAQUE
LAKE
AVIS
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LEGEND
BY Geophysical
by Geological
LEGEND
OUTLINE OF AERO-MAGNETIC ANOMALY.
GROUND SURVEY ANOMALY.
LOCATION MAP
SCALE: 1" = 1/2 MILE

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El Sol Gold Mines Ltd.,
100 Adelaide Street West, Suite 1600,
TORONTO 1, Ontario.

Gentlemen:

This report describes the results of a ground magnetometer survey conducted by Geo-Technical Development Company Limited over part of your property in the Avis Lake Area, Patricia Portion of the Kenora District of Ontario.

The survey was carried out during September and October, 1956, and the results are depicted on Plan No. 1 accompanying this report.

CONCLUSIONS AND RECOMMENDATIONS

The results of the ground magnetometer survey revealed that the large airborne magnetic anomaly is comprised of several large and small strong ground magnetic anomalies, two of which have indicated lengths of 7,200 feet and 13,200 feet and widths of up to 800 feet.

These ground magnetic anomalies are interpreted as caused by the group effect of steeply dipping to vertically situated banded iron formations. The iron formations are of various thicknesses and extensions, but,as a group, they extend to great depth.

The following recommendations have been made:

1. To cover the lake area of Kesaka Lake with a ground magnetometer survey, after the surface is frozen.

2. To drill southerly with a dip of 55°, at the set-up of Diamond Drill Hole No. 3. The proposed length is approximately 600 feet. However, stop, when cut through the iron formation of Diamond Drill Hole No. 1.

3. To drill southerly from a point 20 feet north of Diamond Drill Hole No. 1, with a dip of 50° and a length of 200 feet.

4. To cross-section test drill Anomalous Zone "B" along Line 64W., in Claim No. 39619. Cover the anomaly with short holes; drill at a dip of 45°, toward the south.

5. To cross-section test drill Anomalous Zone "A" along Line 28E. Cover the anomaly with short holes; drill at a dip of 45° toward the south.

6. To do some detailed prospecting at the places indicated on Plan No. 1 accompanying this report.

It is also suggested that the Company Geologist should investigate the iron formation exposed along the north shore of Tepeka Lake, approximately 1/2 mile west of the property.

Further development work can be visualized by the results of this first program of test diamond drilling, and the results already obtained from Diamond Drill Holes No's. 1, 2 and 3.

PROPERTY, LOCATION AND ACCESS

The property is comprised of one hundred and twenty-four (124) claims, of which the following sixty-six (66) claims, with the exception of the lake areas, are covered by the ground survey:

39511	39513	inclusive
39516	39521	"
39524	39540	"
39546	39558	"
39562	39564	"
39573	39577	"
39587	39590	"
39595	39596	"
39601	39603	"
39612	39614	"
39617	39622	"

39582

Incredit for
NX± 39589 - all water.
39613 - not licensed

Extra area covered = 1 claim

(a total of approximately 2,800 acres).

Six of the claims are partly covered by Kesaka Lake, and four are partly covered by Crossley Lake. A total of approximately 480 acres is covered by water.

The property is located about 65 air miles north-northwest of Sioux Lookout, 40 air miles east-northeast of Bruce Lake, on the Red Lake Highway. An old winter road , which more or less follows a power-line, leads from Gold Pines on

this highway, to Uchi Lake. Uchi Lake is located about 11 miles northeast of your property. The present and most convenient access to the property is by air from Sioux Lookout, landing on Kesaka Lake at the west central part of your property.

TOPOGRAPHY

According to a report to Newkirk Mining Corporation by W. R. Montgomery, 1956, the terrain on the property is moderately rugged, relative to the general topography of the Canadian Shield. There are two prominent hill-ridges, one north of Kesaka Lake, and the other striking east-west behind the camp-site. At the west end of the latter, the elevation is approximately 100 feet above the lake, which is about 1,300 feet above sea level.

The surveyed area contains one large lake - the Kesaka Lake, and the western portion of Crossley Lake. The drainage is to the east, from Kesaka Lake to Crossley Lake, and from there, south to Avis Lake.

There are not many outcrop areas on the property. The ground south and southeast of Kesaka Lake is mostly swampy.

The topographic features of the property are given on Plan No. 1 accompanying this report.

GEOLOGY

A detailed geological survey was carried out by W. R. Montgomery, on behalf of Newkirk Mining Corporation, during the period from August to October, 1956. The results of his work are given on the plan showing the results of the magnetometer survey.

The geological formations located on the property are as follows:

PRE-CAMBRIAN

Intrusives

(8) Lamprophyre Dyke

(7) Diorite Porphyry

(6) Gabbro

Slate Lake Series

(5) Bedded Amphibolite

(4) Conglomerate

(3) Paragneiss (greywacke)

(2) Iron Formation (siliceous magnetite)

(1) Quartzitic Mica Schist.

Montgomery has described each of the rock types in his report. He followed J. D. Bateman, who surveyed part of the same area for the Ontario Department of Mines in 1938, and considers that the iron formation belongs to the lower part

of the Slate Lake Series, which is dominantly sedimentary.

Incidentally, in checking the geological data, the writer noted that an iron formation of approximately 1 mile in length is located just north of Tepeka Lake (Map No. 48g, Ont.). Tepeka Lake is located approximately 1/2 mile west of your property. According to the description given by Bateman (1940), this iron formation belongs to the same belt that occurs on your property. It follows that, if the iron formation found on your property is of merit, this Tepeka Lake deposit is probably of merit. It is the opinion of the writer that the Geologist of the Company should investigate the Tepeka Lake Iron Formation, if such has not been done.

MAGNETOMETER SURVEY RESULTS AND INTERPRETATIONS

The magnetometer survey has outlined two main zones of strong magnetic anomalies and nine other smaller anomalies. These anomalies are lettered: "A" to "I" inclusive, and described as follows:

"A" Zone has an indicated width of up to 800 feet and an indicated length of 13,200 feet, striking east-west across the property. This anomaly corresponds,in part,with the iron formation discovered by Bateman. An average width of 500 feet was observed by him. Recent diamond drilling on the property indicates that the anomaly is caused by at least two bands of

magnetite-rich iron formation.

"B" Zone has an indicated width of up to 800 feet, and an indicated length of 7,200 feet. Geophysically, it is very similar to "A" Zone, and could be accounted for by similar bands of iron formation.

"C" and "D" Zones are much smaller anomalies, which are located near, and apparently striking toward, Kesaka Lake. They are apparently caused by narrow bands of iron formation.

"E", "F" and "G" Zones are three small anomalies related closely to each other. They are located east of Kesaka Lake, south of the creek which runs from this lake to Crossley Lake. This location corresponds to the iron formation mapped by Bateman (Map No. 48g, Ont.), within an outcrop area of greenstone.

"H" Zone is a small anomaly located just north of the west end of "A". Geological information indicates that the anomaly is underlain by conglomerate,with some magnetite. The anomaly is therefore probably an indication of the local enrichment of this magnetite in conglomerate.

"I" Zone is a small anomaly located at the west boundary. Diorite, in contact with some magnetite, has been

located here. This geological condition is different from that of the others.

There are several weak magnetic anomalous areas outlined on the property. These anomalous areas are apparently related to gabbro, diorite, or porphyry, where mineralization other than magnetite could be expected. Detailed prospecting is recommended, to check these anomalous areas. The choice locations for prospecting are given on the plan accompanying this report.

EVALUATION OF MAGNETIC DATA

Evaluation of the magnetic data as indications for this magnetite-type iron-ore deposit has been tested by Diamond Drill Holes No's. 1 to 3 inclusive, across the "A" zone. Although the drilling has not completely cross-cut the anomaly, the drilling revealed that:

(a) an off-scale anomaly of 600 feet in width has low-grade magnetite ore in the form of narrow, to up to 40-foot thick, bands. Surface observations along the same zone, by Montgomery (1956): 50 feet or more in width; by Bateman (1939): an average of 500 feet in width. Therefore, it follows that:

(b) the length of this anomaly indicates the approximate length of such magnetite bands, or a

group of such magnetite bands;

(c) the intersected, steeply-dipping to vertically-situated ore bands are located near the centre of the anomaly. This occurrence agrees with the one-pole magnetic effect of the anomaly, which indicates a great depth extension of the magnetic body.

MAGNETOMETER SURVEY METHOD AND INSTRUMENT DATA

A magnetometer survey was conducted over 66 claims of the 124-claim group property, followed by the base check method.

The instruments used for this survey were: a Wolfson Type Magnetometer, with a sensitivity of 21.3 gammas per scale division; a Watts Magnetometer, Model A-2, with a sensitivity of 29.7 gammas per scale division; and a Sharpe Magnetometer, with a sensitivity of 24 gammas per scale division.

SURVEY DATA

The line cutting and magnetometer survey were carried out by Geo-Technical Development Company Limited, during the period from September 27 to October 15, 1956.

Two base lines were cut, 1 mile apart, and turned off by transit from a Government Survey Base Line which transects the eastern part of the property. Picket lines were turned off at 400-foot intervals, by board, from one base line, and tied into the other base line.

A total of 3.7 miles of line was cut by Newkirk Mining Corporation, and 52.7 miles of line were cut by Geo-Technical Development Company Limited.

A base control station was established 600 feet south of the north base line, on Line 32W.. Control stations were set up on the north base line at - Line 76E., Line 0+00, Line 28W., Line 48W., Line 68W., Line 80W., and Line 88W..

A total of 47.9 miles of magnetic survey was carried out, requiring 2,529 readings, taken at 100-foot intervals.

The number of 8-hour man days required to complete this survey is as follows:

	(8-Hour) Man Days	Attributable to Assessment Work
Line Cutting and Chaining	64 x 4	256
Operating Magnetometer Survey	75 x 4	300
Maps and Calculations	15 x 4	60
Drafting	8 x 4	32
Preparation of Report and Office Typing	7 x 4	28
	169	676

Respectfully submitted,

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

S. S. Szetu, Ph. D.,
Geologist.

Toronto, Ontario,

November 5, 1956.

SSS/rap

$\frac{676}{65}$ = 10.4 days per claim except KK 39589 & 39613.

LAKE ISLAY

NORTH BASE LINE

GOVERNMENT BASE LINE

SOUTH BASE LINE

39557 39556 39539 39538 39554 39553 39535 39536 39550 39551 39533 39532 39548 39547 39530 39529 39577 39574 39575 39570 3957

ALDERS HILL SPRUCE HEAVY SPRUCE GROWTH SPRUCE, MOSS LABRADOR TEA, SPRUCE, BUSH SPRUCE, LABRADOR TEA BUSH LABRADOR TEA SPRUCE BUSH SPRUCE, BUSH SPRUCE, LABRADOR TEA, BUSH BUSH, LABRADOR TEA, SPRUCE BIRCH SPRUCE, MOSS SPRUCE SWAMP POND TIE LINE MILE POST X1

L 0+00 L 4E L 8E L 12E L 16E L 20E L 24E L 28E L 32E L 36+10E L 40E L 44E L 48E

200

39603

39540

HILL

SPRUCE, LABRADOR TEA, BUSH

SPRUCE, HEAVY BUSH

SPRUCE, BUSH

L 52E | L 56E | L 60E | L 64E | L 68E | L 72E | L 76E | L 80E | L 84E | L 88E | L 92E

BUSH, LABRADOR TEA, SPRUCE

39546

39537

SPRUCE, LABRADOR TEA BUSH

SPRUCE, BUSH

39601

ALDERS

LABRADOR TEA

SPRUCE

ALDER

ALDER

39602

39534

CROSSLEY LAKE

39612

39613

39531

39610

39611

NEGWATIS FLOAT

39576

SPRUCE, BUSH

39572

OCTOBER 1950

GEOLOGICAL PLAN

EASTERN HALF

EL SOL GOLD MINES LTD.

KESAKA LAKE RED LAKE MINING DIVISION
NORTHWESTERN ONTARIO

63.281

SURVEY BY

GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

Scale 1" = 200'

LEGEND.

PRE-CAMBRIAN

INTRUSIVES

8 LAMPROPHYRE DYKE
7 DIORITE PORPHYRY
6 GABBRO

SLATE LAKE SERIES

5 BEDDED ARGILLITE
4 CONGLOMERATE
3 PARAGNEISS (GREYWACKE)
2 IRON FORMATION (SIL MAGNETITE)
1 QUARTZITIC MICA SCHIST

LOCATION MAP
SCALE: 1" = 1/2 MILE

WEST HALF | EAST HALF | AREA SURVEYED | CROSSLEY L.

LEGEND.
OUTLINE OF AERO-MAGNETIC ANOMALY.
GROUND SURVEY ANOMALY.

153. 11. 56

63-781

GEOLOGICAL

WESTERN HAL

EL SOL GOLD

KESAKA LAKE RED LAKE MINING
NORTHWESTERN ONTAR
SURVEY BY
GEO-TECHNICAL DEVELOPMENT COMP

Legend

PRE-CAMBRIAN

INTRUSIVES

8 LAMPROPHYRE DIKE
7 DIORITE PORPHYRY
6 GABBRO

SLATE LAKE SERIES

5 BEDDED AMPHIBOLITE
4 CONGLOMERATE
3 PARAGNEISS (GREYWACKE)
2 IRON FORMATION (SIL. MAGNETITE)
1 QUARTZITIC MICA SCHIST

Symbols

CONTORTED BEDDING
FOLIATION, SCHISTOSITY
LINEATION
JOINTING
FRACTURE CLEAVAGE
QUARTZ VEIN, FRACTURE
DRAG FOLD
GLACIATION
MINOR SHEAR
DIFFERENTIAL MOVEMENT
GEOLOGICAL CONTACT
ROCK DEMARCATION
SCARP, CLIFF
HILLSIDE
CREEK
SWAMPY, LOW
TRACTOR RD
CLAIM LINE
BOUNDARY
210 NEEDLE READING

Scale 1" = 200'

OCTOBER 1956

GEOLOGY & DRAWN BY W.R.M.

39516 39515 39522 39523
39513 39516 39521
39512 39517 39520
39511 39518 39519 39526
39621 39620 39619
39622 39596 39595
39600 39597

PLAN

MINES LTD.

DIVISION
10
NY LIMITED

39617
39614
39558
39557
39555
39554
39618
39528
39527
39551
39552
39564
39548
39549
39563
39588
39587
39562
39582

NORTH BASE LINE

SOUTH BASE LINE

KESAKA LAKE

CAMP

131-3

Problem Page
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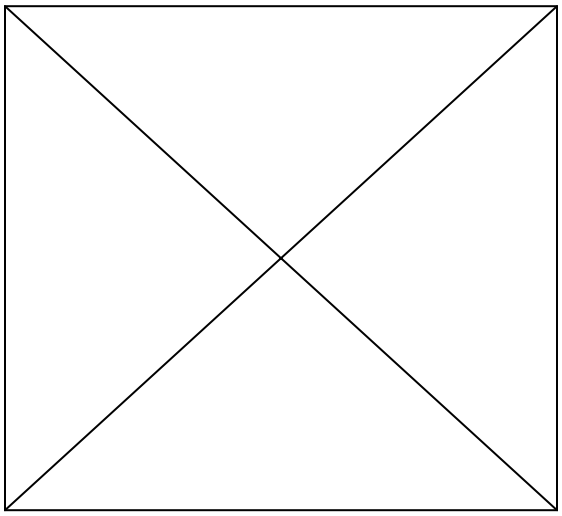

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