GEONCAL SURVEY
GENEVA LAKE MINE CLAIM GROUP

Claims: S-1241838, S-1241839, S-1241840, S-1241956, S-1241957, S-1241958, S-1242025, S-1242026, S-1242027

By:

R.H. Sutcliffe
Address: 100 Broad Leaf Crescent, Ancaster, Ontario L9G 3R8

And

Harold J. Tracanelli
192 North Shore Road
Box 122
Onaping, Ontario P0M 2R0

June 14th, 2002

Project Location – Hess Township
Sudbury Mining Division
Claim Map – Plan G4062
NTS Map Sheet – 4I1/12, 4I1/13
UTM Coordinates – 5181800N, 460600E
SUMMARY

The Geneva Lake Mine property consists of 9 contiguous unpatented staked claims totaling 34 units that are recorded on the Hess Township claim map, Sudbury Mining Division. The property includes the past producing Geneva Lake Mine and is 45 kilometers northwest of the city of Sudbury, Ontario.

Following discovery of mineralization in 1924, the property has had a long history of exploration. The mine produced lead and zinc concentrates during the period 1941 to 1944. During this period 80,588 tonnes of ore grading 3.34% lead and 9.21% zinc were mined to produce 10.4 million lbs of zinc, 3.6 million lbs of lead.

The Geneva Lake Mine property is located in the Archean Benny Greenstone Belt. The greenstone belt contains Archean mafic, intermediate and felsic metavolcanic rocks, and metasediments. These supracrustal rocks are intruded by Archean granitoid and Proterozoic mafic rocks.

An 11.4-kilometer cut grid with 100 meter line spacing was established on the claims to provide control for the geological survey on the property. The baseline has an azimuth of 138°.

Major rock units in the claim group strike in an east-west direction across the area of the grid. All of the Archean rocks are characterized by a strong fabric that strikes approximately east west and dips steeply to moderately to the south. The metamorphic grade is amphibolite facies. Rock units include: mafic metavolcanics, intermediate metavolcanics, felsic metavolcanics, minor metasediments, diorite, tonalite to granodiorite, Nipissing gabbro, and olivine diabase dikes.

The Geneva Lake deposit is considered to be a stratiform volcanogenic massive sulphide. In the claim group, metavolcanic rocks range in composition from mafic to felsic and potentially define a stratigraphy despite strong metamorphism and deformation. Further work should initially focus on improving definition of the volcanic stratigraphy in claim group so that the favorable horizon hosting the Geneva Lake deposit can be traced along strike.

A ground magnetic survey and stripping with detailed mapping of outcrops should assist in improving the definition of stratigraphy. A detailed ground EM survey particularly along line L1E, L2E, and L3E may provide further definition of historical and airborne EM anomalies and define drill targets.
LOCATION AND ACCESS

The past producing Geneva Lake Mine, located in Hess Township in the Sudbury Mining Division, is 45 kilometers northwest of the city of Sudbury, Ontario. The Geneva Lake Mine is 9 kilometers east of the Benny town site on the Canadian Pacific Railway and 7 kilometers west of highway 144 (Figure 1).

The property is accessible by a gravel road known locally as the KVP road. Proceeding north on highway 144, the KVP access road to the past producing Geneva Lake Mine is located 12.2 km north of the town of Cartier. The property is approximately 8 kilometers east of highway 144 on the gravel road. To reach the mine site, a right turn is required at 5.0 km from highway 144 at a fork in the gravel road. The road is not maintained in winter.

PROPERTY

The property (Figure 2) consists of 9 contiguous unpatented staked claims that are recorded on the Hess Township claim map (G4062), Sudbury Mining Division. The recorded holder of the claims is Richard H. Sutcliffe. Claim numbers with unit size and recording date are tabulated as follows:

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* Recorded originally as four claims and amended to 2 claims

PREVIOUS EXPLORATION

John Collins discovered a lead-zinc vein at what would later become the Geneva Lake Mine in the southeast corner of Lot 7, Con. 6 of Hess Township in October 1924. In 1925, the Collins-Babson Syndicate was formed and diamond drilling and trenching were carried out on the showings. In 1927 the property was optioned to Towagmac Exploration Co. Ltd. The company carried out 2000 feet of diamond drilling, sank a shaft to a depth of 250 feet and carried out 700 feet of lateral development on the 235-foot level.
In 1929, Lake Geneva Mining Co. Ltd. was incorporated with Towagmac Exploration Co. Ltd. retaining a controlling interest in the property. Development continued until 1930.

The following description of mine workings is from Card and Innes 1981. "In 1937 the shaft was deepened to 120 meters and additional working levels were established at the 94.5 and 112.5 meter levels. In 1943, an inclined winze was sunk below the ore zone from the 94.5-meter level to a vertical depth of 192 meters and two more levels were established at 157.5 and 184.5 meters (Card and Innes 1981).

The mine produced lead and zinc concentrates during the period 1941 to 1944. During this period 80,588 tonnes of ore grading 3.34% lead and 9.21% zinc were mined to produce 10.4 million lbs of zinc, 3.6 million lbs of lead and silver valued at $28,416. When the mine closed in 1944, 150,000 tonnes of ore were left in the workings.

In 1949 the property was acquired by Bidgood Kirkland Gold Mines Limited who erected a 125 ton per day mill, dewatered and rehabilitated the underground workings, and carried out underground sampling and some 3,600 meters of diamond drilling. This work indicated reserves of some 114,000 tons of material grading 10% zinc, 3% lead and 90 cents per ton precious metals."

In 1972, Geneva Metals Inc. (Lake Geneva Mining Co. Ltd.) carried out a ground magnetic and electromagnetic survey on the mine property. The same year Tex-Sol Explorations Ltd. carried out an airborne geophysical survey over most of the Benny Greenstone Belt as part of the massive sulphide exploration effort. In 1973, Geneva Metals Inc. performed a ground EM-16 electromagnetic, magnetic and horizontal loop electromagnetic survey. Magnetic and VLF-EM anomalies that were detected were reportedly related to the contact zone of a northeast trending diabase dike.

In 1984, Noranda Exploration Company Limited performed an airborne geophysical survey over the Benny Greenstone belt. No significant magnetic or electromagnetic anomalies were detected over the Geneva Lake Mine. In 1987, Falconbridge Ltd. flew an airborne geophysical survey over the Benny Greenstone belt with similar results to the Noranda survey.

In 1991, The Ontario Geological Survey carried out an airborne electromagnetic and magnetic survey over the entire Benny Greenstone belt. The survey revealed a number of weak EM anomalies on the property. Weak conductors were detected at the Geneva Lake Mine. One corresponds with the area of the tailings and a second appears to correspond with the trend of mineralization north west of the shaft.
GEOLOGY

The Geneva Lake Mine property is located in the Archean Benny Greenstone Belt. The Benny Greenstone belt (Card and Innes 1981) is approximately 35 kilometer by 5 kilometer wide and is bounded by Archean granitoid rocks of the Ramsey-Algoma granitoid complex.

The Benny Greenstone belt is greenschist to amphibolite facies. A strong penetrative east striking fabric in the Archean rocks is approximately parallel to lithological contacts. Archean supracrustal rocks consist of calc-alkaline andesite, dacite, and rhyolite flows, pyroclastic tuffs and breccias, cherty metasediments, graphitic shales and turbidite which form the Geneva assemblage and thoelitic basaltic flows with minor calc alkaline volcaniclastic and metasedimentary rocks forming the Bluewater assemblage (Card and Innes 1981; Jackson and Fyon, 1991). Significant stratabound mineralization such as the Geneva Lake Mine is associated with the top of the Geneva assemblage. Based on northward facing directions throughout the belt, Guthrie (1980) concludes that the Bluewater assemblage conformably overlies the Geneva assemblage.

Early Proterozoic Huronian metasedimentary rocks and Nipissing gabbroic rocks overlie and intrude the Archean rocks of the Benny Greenstone belt.

GRID

A cut grid with 100 meter line spacing was established on the claims in late April and early May 2002. The grid re-establishes an older grid probably cut in the last 10 years. The location of the old grid was established by Harold Tracanelli and Richard Sutcliffe on April 23, 2002. Glenn McBride, Notre Dame du Nord, Quebec was contracted to cut the grid. The total length of the grid including the baseline and tie line is 11.4 kilometers. The baseline has an azimuth of 138°. The base line and grid lines are picketed at 25 meter spacing. The grid origin is the Geneva Lake Mine shaft. The grid layout is shown in Figure 3.

GEOLOGICAL SURVEY

Geological mapping was carried out by Richard Sutcliffe and Harold Tracanelli in May to June 2002. Mapping was done using the grid as control and pace and compass traversing between grid lines.

RESULTS

The grid is predominantly underlain by Archean metavolcanic and metasedimentary rocks of the Benny Greenstone belt and by Archean granitoid intrusions. Locally Early Proterozoic mafic rocks intrude the Archean rocks. The Archean metavolcanic and metasedimentary rocks are metamorphosed to amphibolite facies and are strongly foliated.
Major units strike in an east-west direction across the area of the grid. All of the Archean rocks are characterized by a strong fabric that strikes approximately east west and dips steeply to moderately to the south. In the area of the Geneva Lake mine the stratification in the metasedimentary sequence strikes northwest, whereas both east and west of the mine the stratification strikes east. The deposit is considered to occur on the southeast flank of a large antiformal drag fold (Card and Innes 1981). The deposit dips at 40 to 75° to the southwest (Card and Innes 1981).

The bedrock is partly mantled by Pleistocene till, sand, and gravel and by recent swamp deposits. Parts of the grid have relatively heavy overburden with large boulders.

The rocks underlying the grid have been subdivided mapped units that are described as follows.

**Mafic Metavolcanic rocks (Unit 1)**

Rocks that are estimated to contain greater than 40 percent mafic minerals are mapped as mafic. Outcrops of mafic metavolcanic rocks occur north of the Geneva Mine on the KVP road. At this location, the mafic metavolcanic rocks are dark gray to black on weathered and fresh surfaces, medium-grained, and strongly foliated to gneissic. The rocks are composed of sub-equal amounts of hornblende and plagioclase. Plagioclase is locally segregated into centimeter scale feldspathic bands resulting in a gneissic fabric. Lenses of epidote rich material are also present.

**Intermediate Metavolcanic rocks (Unit 2)**

Rocks estimated to contain 15 to 40 percent mafic minerals are mapped as intermediate. These rocks are the dominant lithology in the central part of the grid area, particularly south and east of the Geneva Mine.

The intermediate metavolcanic rocks are medium to dark gray on weathered and fresh surfaces and fine-grained to aphanitic. The rocks are strongly foliated to locally gneissic. Wispy lenses of amphibole and biotite are locally observed in the intermediate rocks.

At many locations, such as at BL0 4+50 E, the intermediate metavolcanic rocks contain heterolithic mafic to felsic fragments that have been strongly flattened. The fragments typically have dimensions of 1 to 2 centimeters in the short dimension and 10 centimeters in the long dimension.

**Felsic Metavolcanic rocks (Unit 3)**

Rocks estimated to contain less than 15 percent mafic minerals are mapped as felsic. A prominent band of felsic rocks occurs east of the Geneva Lake mine such as at L2E 2+25N. Smaller felsic units occur on L4E 1+00N and at BL0 5+00E.
The felsic rocks are light buff to pinkish colored on fresh and weathered surfaces. The rocks are strongly foliated. The unit crossing L2E 2+25N has 1 by 3 millimeter flattened quartz lenses that are probably relict phenocrysts.

Metasedimentary rocks (Unit 4)

Minor metasedimentary rocks are mapped south of the baseline between L4E and L5E. These are highly deformed, micaceous inclusions in granitoid rocks.

Minor siliceous pyritic metasediments are noted in the vicinity of the trench on L4E 1+00N.

Dioritic rocks (Unit 5)

Medium grained, massive to weakly foliated hornblende diorite occurs in outcrops near the Geneva Lake mineshaft. The diorite intrudes intermediate metavolcanics.

Granitoid rocks (Unit 6)

Medium grained, massive to foliated tonalite to granodiorite is present on the southern margin of the metavolcanic rocks. The tonalite to granodiorite contains approximately 25% quartz and less than 10% mafic minerals. Sills of granitoid rocks intrude the metavolcanic rocks north of the base line between L4E and L5E.

Nipissing gabbro (Unit 7)

Medium grained Nipissing gabbro forms east-west striking sills that intrude the Archean rocks. The Nipissing gabbro is generally medium-grained and massive. Chill contacts with fine-grained diabase are observed at several localities.

Olivine diabase (unit 8)

North-south striking olivine diabase dikes are observed to intrude the Archean rocks at several locations. The olivine diabase is fine- to medium-grained, massive and dark brown weathering. Good examples are observed on L3E south of the base line.

Alteration

Minor to moderate epidote alteration, silicification, and locally carbonate alteration is noted in intermediate to felsic rocks north of the baseline and east of the Geneva Mine.

Mineralization

Strong chalcopyrite, pyrite and magnetite mineralization occurs at the location of the Geneva Mine shaft. Minor disseminated pyrite, pyrrhotite, chalcopyrite mineralization is noted in metavolcanic rocks particularly in the vicinity of L3E north of the baseline.
INTERPRETATION

The Geneva Lake deposit is considered to be a stratiform volcanogenic massive sulphide. In the claim group, metavolcanic rocks range in composition from mafic to felsic and potentially define a stratigraphy despite strong metamorphism and deformation. The deposit is considered to be conformable within a thin unit of siliceous, micaceous metasediments at the contact between mafic and felsic metavolcanics (Card and Innes 1981).

RECOMMENDATIONS

Further work should initially focus on improving definition of the volcanic stratigraphy in claim group so that the favorable horizon hosting the Geneva Lake deposit can be traced along strike. A ground magnetic survey should potentially assist in improving the definition of stratigraphy, particularly in areas of poor exposure east of the Geneva Lake mine.

Airborne EM surveys flown by Falconbridge and Noranda have not shown an anomaly associated with the Geneva Lake mine, which is sphalerite rich. A recent airborne survey by the OGS has shown a weak anomaly east of the mine near the east edge of the mine tailings. A detailed ground EM survey particularly along line L1E, L2E, and L3E may provide further definition and control on the location of this anomaly and define drill targets.

Stripping and washing of outcrops would assist in detailed mapping of stratigraphy. The area of the large outcrop in the vicinity of L3E 2+00N is on strike from the Geneva Mine and two EM targets defined from earlier work. This may be a high priority area to conduct further detailed mapping.
STATEMENT OF QUALIFICATIONS

I hereby certify that:

1. I am a consulting geologist and reside at 100 Broad Leaf Crescent, Ancaster, Ontario, L9G 3R8.

2. I graduated from University of Toronto with a Bachelor of Science Degree in 1977, and Master of Science Degree (Geology) in 1980, and the University of Western Ontario with a Ph.D in geology in 1987.

3. That I have been practicing my profession for the past 25 years.

4. That the claims described in this report are registered in my name.

5. That the accompanying report is based on site visits to the property, general knowledge of the area, and a review of documents pertaining to the property.

6. I consent to the use of this report for assessment purposes as required.

Ancaster, Ontario
June 14, 2002

Richard Sutcliffe, Ph.D.
STATEMENT OF QUALIFICATIONS

Harold J. Tracanelli

I, Harold J. Tracanelli, currently reside at 192 North Shore Road, in the Town of Onaping, within the Greater City of Sudbury, Ontario.

I have been actively engaged in prospecting, geological and various mineral exploration related functions of one sort or another since 1980.


In 1986, New Trails Explorations was formed and continues to operate, providing a variety of mineral exploration services to clients.

I hereby certify that I have personal knowledge, was present, participated and provided support relating to the Geotechnical -Geological Survey work that was carried out on the Geneva Lake Mine Claim Group Property, situated in Hess Township, Sudbury Mining Division, Ontario.

All exploration related duties and functions where required have been carried out in accordance to industry standards.

Onaping, Ontario
June 14th, 2002

Harold J. Tracanelli; GETN
REFERENCES


FIGURES

Figure 1. Property location
Figure 2. Claim Map
Figure 3. Grid Layout

MAPS

Geology of the Geneva Lake Mine claim group, Scale 1:2000
# Work Report Summary

**Transaction No:** W0270.01033  
**Status:** APPROVED  
**Recording Date:** 2002-JUN-14  
**Approval Date:** 2002-OCT-16  
**Client(s):** 225603  
**Survey Type(s):** W0270.01033

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**External Credits:**

$0

**Reserve:**

$0  
Reserve of Work Report#: W0270.01033  

$0  
Total Remaining

Status of claim is based on information currently on record.
Dear Sir or Madam

Submission Number: 2.23759
Transaction Number(s): W0270.01033

Subject: Approval of Assessment Work

We have approved your Assessment Work Submission with the above noted Transaction Number(s). The attached Work Report Summary indicates the results of the approval.

At the discretion of the Ministry, the assessment work performed on the mining lands noted in this work report may be subject to inspection and/or investigation at any time.

Thank you for responding to the 45 day notice.

If you have any question regarding this correspondence, please contact LUCILLE JEROME by email at lucille.jerome@ndm.gov.on.ca or by phone at (705) 670-5858.

Yours Sincerely,

Ron Gashinski
Senior Manager, Mining Lands Section

Cc: Resident Geologist
    Richard Harry Sutcliffe
    (Claim Holder)

Assessment File Library
Richard Harry Sutcliffe
(Assessment Office)