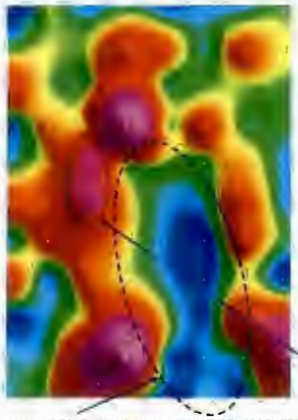
SGH sampling and other assay

Cleaver Property

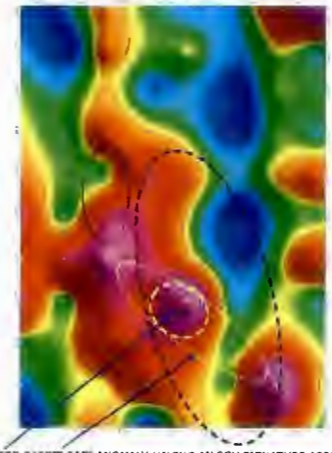
SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



HALO ANOMALOUS ZONE HAVING AN SGH SIGNATURE ASSOCIATED WITH VMS ZONE-8

GEOSOFT

SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



"NESTED RABBIT-EAR" ANOMALY HAVING AN SGH SIGNATURE ASSOCIATED WITH VMS

GEOSOFT

Prepared for:
Larry Gervais

By:

True North Mineral Laboratories
68 Bruce Avenue
South Porcupine, Ontario

True North Mineral Laboratories Inc.

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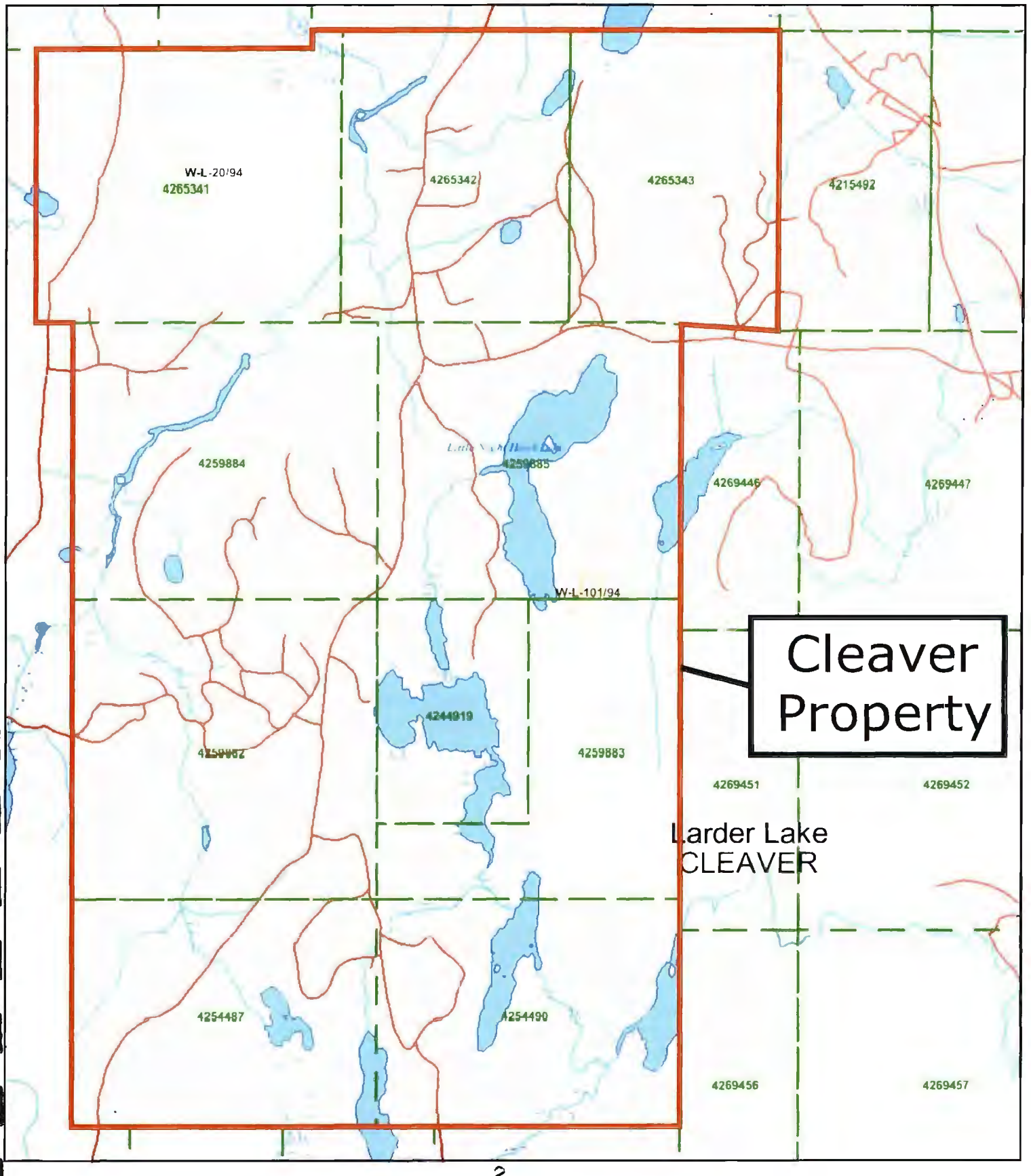

W-L-20/94
4265341
4265342
4265343
4215492
4259884
4259885
4269446
4269447
W-L-101/94
Cleaver
Property
4244919
4259882
4259883
4269451
4269452
Larder Lake
CLEAVER
4254487
4254490
4269456
4269457

Introduction

Between July 15th and July 24th, 2011 SGH sampling was carried out on Cleaver Property. True North Mineral Laboratories carried out field work on a contract basis for the claimholder, Larry Gervais.

SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. In the case of Cleaver Property, potential targets are VMS and Gold formations.

In addition to the SGH program, a cerussite-galena (Pb) vein was sampled on Oct 12, 2011 and one of the SGH sample sites was re-visited on Nov 3, 2011, in order to verify strong metallic mineralization observed in one of the lake bottom SGH samples.

As follow-up to the assessment report filed on Aug 21, 2011, the current report will provide more detailed Zinc assay on several past samples, including one sample containing >10,000ppm Zn.

Further details are provided under "Work Program".

cerussite-galena vein (Pb) sampled Oct 12/11

Property Description

Cleaver Property consists of 10 mining claims, 126 claim units, covering an area of *2016ha.*

Claim Numbers 4265341, 4265342, 4265343, 4259882, 4259883, 4259884, 4259885, 4254487, 4254490 and 4244919 are located in Cleaver Township, Larder Lake Mining Division, approximately 42 Km South-East of Timmins. Refer to *Figure 1* (Location and Access map) and *Figure 2* (Sample Location map) for more detailed claim locations.

Access

The claims were accessed from Timmins by traveling East on HWY101 to South Porcupine, then South on Langmuir / Stringers Road for a total of 56km from Timmins to the campsite on Cleaver Property. Refer to *Figure 1* (Location and Access map) for more detailed access information.

Campsite – Cleaver Property, July 2011

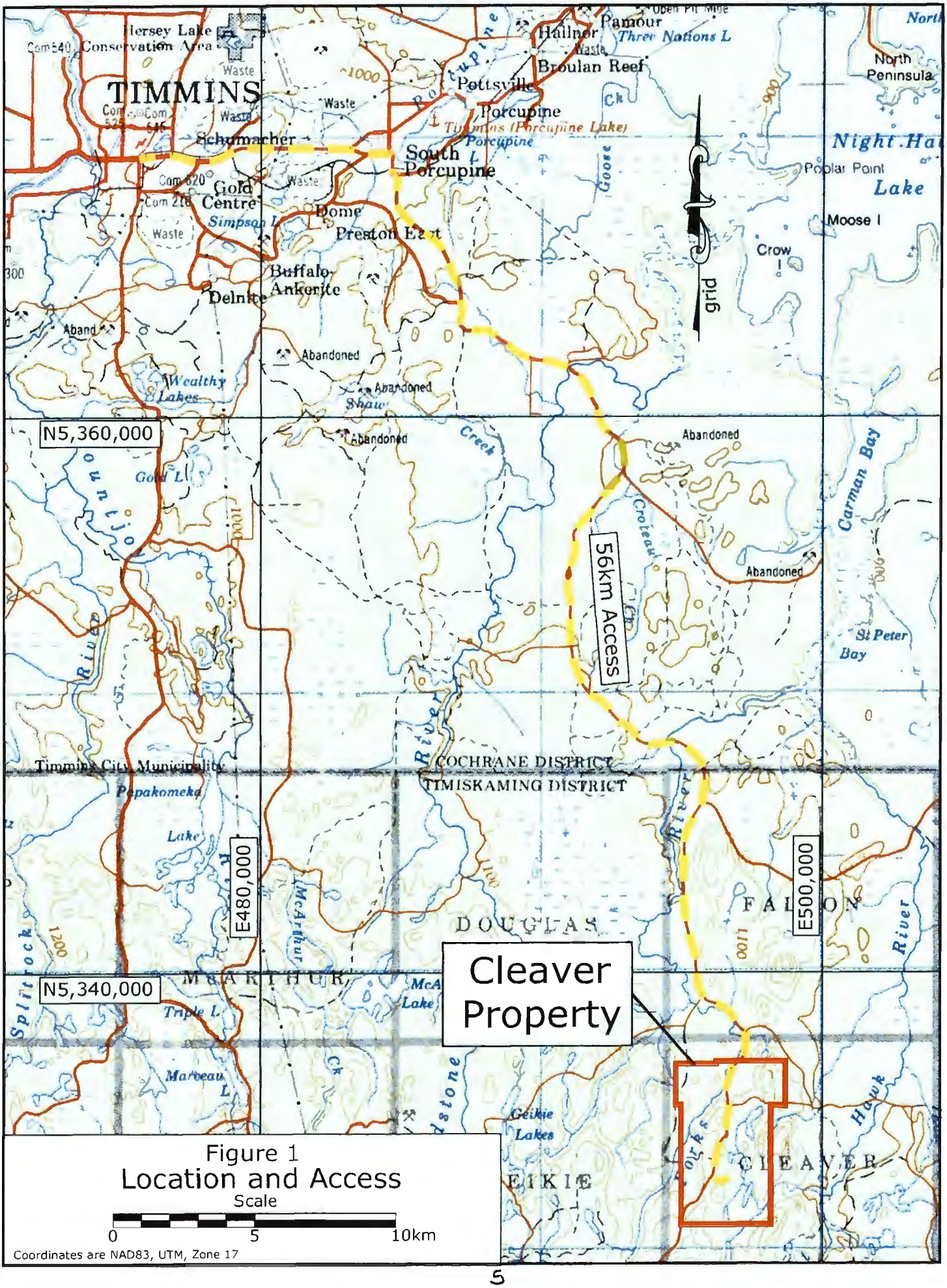
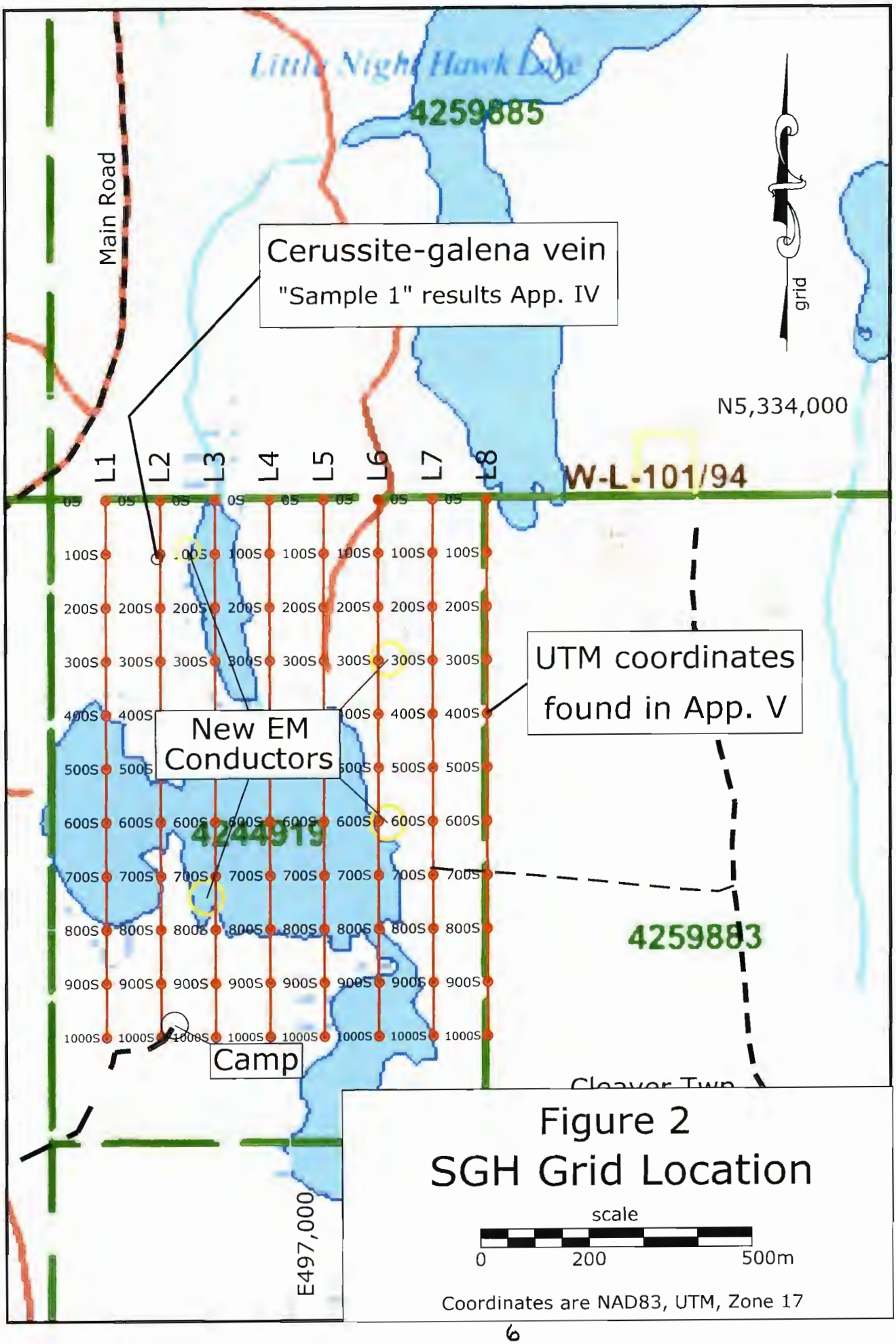


Figure 1
Location and Access
Scale
0 5 10km
Coordinates are NAD83, UTM, Zone 17


Little Night Hawk Lake
4259885
Main Road
Cerussite-galena vein
"Sample 1" results App. IV
grid
N5,334,000
L1
L2
L3
L4
L5
L6
L7
L8
W-L-101/94
UTM coordinates
found in App. V
New EM
Conductors
4244919
4259883
Camp
Cleaver Twp
E497,000
Figure 2
SGH Grid Location
scale
0
200
500m
Coordinates are NAD83, UTM, Zone 17

Work Program

In July, 2011 True North Mineral Laboratories was hired on a contract basis by the claimholder (Mr. Gervais), to arrange field and laboratory work for Cleaver Property.

A two-phase program was requested by Mr. Gervais;

1. Surface (rock) sampling at sites proximal to EM conductors.
2. SGH (Soil Gas Hydrocarbon) sampling to cover the same EM conductors using a regular grid pattern and the SGH method.

Phase 1 report was submitted on Aug 21, 2011.

The current report covers Phase 2 (SGH program) and further sampling of selected sites as described below.

Field Work was carried out between July 15th, 2011 and November 3rd, 2011. A camp was established on July 10th, in an open clear-cut within claim 4244919. Camp location is shown on *Figure 2* (Sample Location map).

Setting up camp – July 10th, 2011

Work Program....continued

The temporary camp consisted of a lightweight R-pod camper with stove, refrigerator, running water, shower, toilet, heat and air conditioning – with appliances powered by a Honda 2000 watt generator.

The camp remained in position from July 10th, 2011 to July 24th, 2011. Only the 10 day period from the 15th to the 24th is being expensed to Phase 2. Sampling on Oct 12th, 2011 and November 3rd, 2011 were day trips from Timmins (no camp).

SGH Samples

88 SGH samples were retrieved from the property.
The sample grid was designed to cover airborne EM conductors based on an airborne EM map, supplied to the Author by Mr. Gervais.

As the Cleaver property had been previously optioned by Mr. Gervais to a junior company, the airborne EM map is a product of a previous work program. For the purpose of this report, only the EM conductors reasonably close to the sample area have been transcribed (digitized) onto *Figure 2* (Sample Location map).

Other Sampling

Two (2) sites of interest were identified during phase 1 and 2;

1. cerussite-galena vein (Pb), observed but not sampled in phase 1
2. strongly mineralized lake bottom sample, observed during phase 2 SGH sampling at grid location L4/500S (UTM E496960 N5333300)

Mr. Gervais requested sampling of the above 2 sites.
The cerussite-galena vein was sampled on Oct 12, 2011 and samples were submitted for analysis to Expert Labs, indirectly through Cattarello Assayers from Timmins. Certificate of Analysis from Expert Labs is provided in *Appendix IV*.

The 2nd site was re-visited on Nov 3rd, 2011 with a small canoe and clam-shell sampler. Attempts to duplicate the material observed during the SGH program were unsuccessful.

Any leftover material from the original SGH sample will be returned to True North Minerals from Actlabs and can be sent for further analysis at such time.

Work Program....continued

Methods

Hand Auger and Clam-shell samples for SGH

Samples on dry land were gathered using portable hand auger with detachable T-handle and bit with individual 3ft rod sections held together with bayonet style coupler. Samples from water areas were collected using a clam-shell sampler as shown in photo below.

Clam-shell sampler used to collect lake-bottom SGH samples

Work Program....continued

Samples were retrieved by a 3-man crew, over a 10 day period. The crew initially attempted to retrieve water samples using a small canoe and hand auger. As this proved ineffective – we then tried using a clam-shell sampler from a small canoe.

Using clam-shell in a small canoe proved inefficient.
So we made a 3rd and successful attempt using a 14ft boat with outboard motor. The bigger/wider boat was more stable, for hoisting the heavy clam-shell sampler over the side. Two unexpected trips back to Timmins were made, in order to complete SGH sampling in water areas.

Sampling on dry-land was straightforward, with typical samples retrieved between 10cm and 183 cm depth. Grid lines were brushed-out by machete and sample sites were flagged in advance by 1 worker. A 2-man crew followed behind, to retrieve SGH samples from the pre-flagged sites.

Sample locations and field notations can be found in *Appendix V*.

Mobilizing canoe to Cleaver Property

Material Handling

Samples were retrieved by True North Mineral Laboratories on a contract basis for the claimholder and sent to Actlabs (Activation Laboratories) in Ancaster, Ontario.

Analysis

Analysis and interpretation with regards to ***VMS*** was carried out by Actlabs. More complete details are contained in the full report produced by Dale Sutherland, dated September 16, 2011 and forming the first ½ of *Appendix I* of this report.

A 2nd Interpretation for ***Gold*** was carried out by Actlabs.
More complete details are contained in the full report produced by Dale Sutherland, dated Nov 2, 2011 and forming the second ½ of *Appendix I* of this report.

Other Analysis

As follow-up to the assessment report filed on Aug 21, 2011, the current report provides detailed Zinc assay on several past samples, including one sample containing >10,000ppm Zn (sample KC-761).

New results, using Peroxide with ICP follow-up, provide a more accurate ZN value for the same sample – at **5.45% Zinc.**

8 samples were assayed for Zn, As, Cu and Pb.

Assays can be found in *Appendix VI* and the sample location map from the previous report is included in *Appendix VI* as well.

Results

Raw data for each sample can be found in *Appendix II.*

More complete details, including interpretive maps are contained in the full report produced by Dale Sutherland, dated September 16, 2011(VMS) and Nov 2, 2011(Gold) collectively forming *Appendix I* of this report.

Recommendations

The SGH report, which forms *Appendix I* of this report, was written by Dale Sutherland of Actlabs. Please note – the comments below are the opinion of the Author of the current report, not the opinion of Mr. Sutherland.

VMS

A rating of 5.5 out of 6 is provided through the SGH report by Actlabs.

The SGH grid covers four (4) VTEM conductors from a survey flown by Geotech, which was provided to the Author by Mr. Gervais.

Combined with ground sampling and assay results, the Cleaver Property presents an excellent VMS prospect.

Coincident VTEM and SGH anomalies occur beneath a lake.
The Author recommends diamond drilling in the area confined by coincident VTEM and SGH anomalies.

Gold

A rating of 5.0 out of 6 is provided through the SGH report by Actlabs.

Strong VTEM conductors are normally associated to a VMS deposit.
For reasons unknown at this time – the hydrocarbons identified at Cleaver Property are the same as hydrocarbons identified over gold deposits elsewhere on the globe.

Therefore – it remains plausible that gold may exist as secondary mineralization to the stronger VMS signature.

Once again – diamond drilling is recommended in the area confined by coincident VTEM and SGH anomalies.

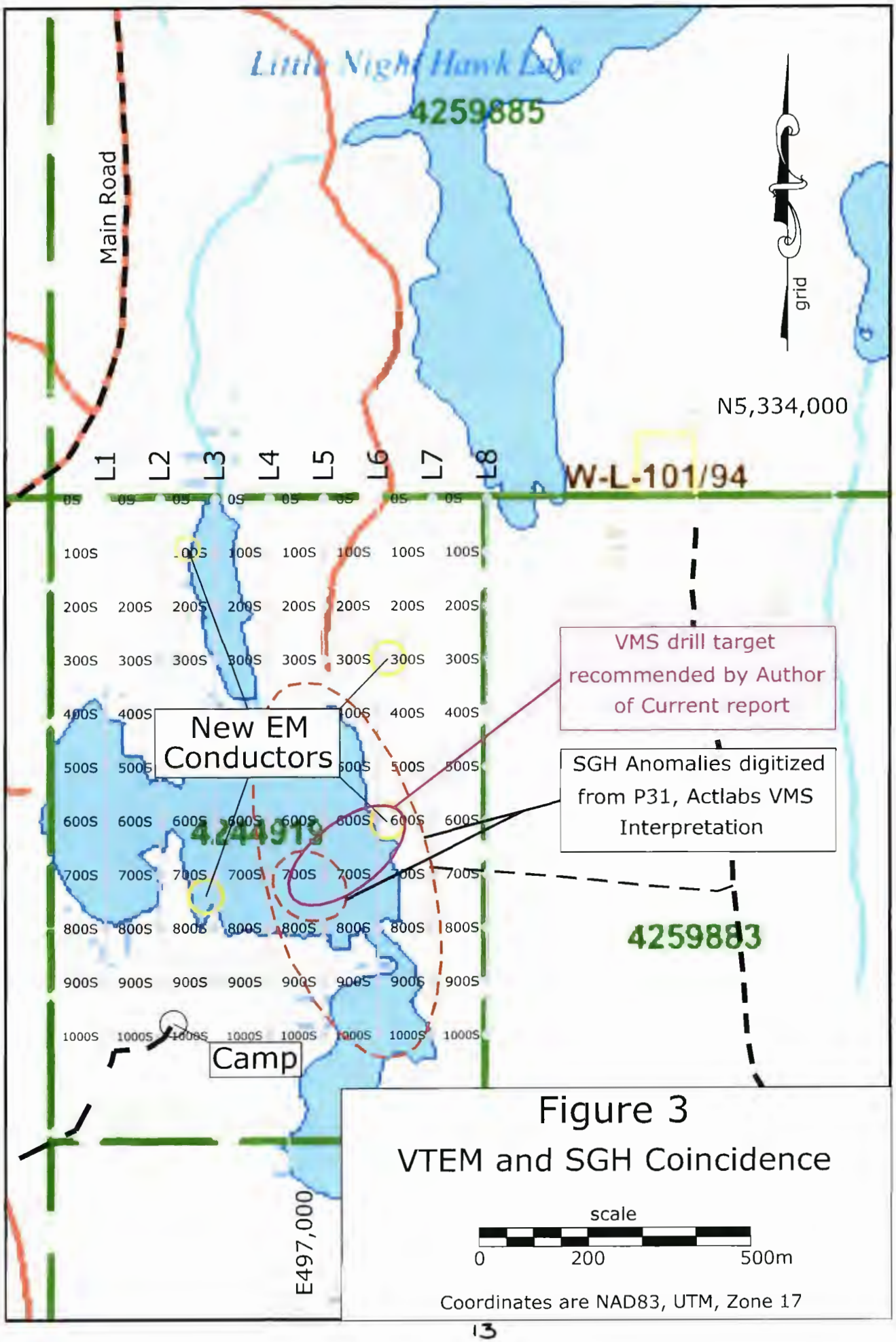


Figure 3

VTEM and SGH Coincidence

Recommendations....*continued*

Regional Structure

The drill target shown on *Figure 3* is further supported when viewed in the context of regional-scale structure (known faults and deformation zones).

Figure 4 presents the VTEM conductors and SGH anomalies, overlaid onto map P-3527. The VTEM conductor and SGH anomaly forming the main drill target, agree closely with the intersection of 2 known faults.

EM History – Cleaver Property

Cleaver Property has been the subject of numerous assessment reports in the past, which include ground-based EM with varied and conflicting results.

The Author views the newest VTEM survey flown by Geotech as superior to any of the past surveys.

Figure 5 presents the VTEM conductors and SGH anomalies, overlaid onto map 82049, where EM was carried out with the GEOTEM III technology of the time;

- GEOTEM III was able to identify 1 weak conductor as shown.
- VTEM was able to identify 4 strong conductors as shown.

The GEOTEM III conductor was never drilled.
The 4 VTEM conductors likely show conductivity deeper into the bedrock than GEOTEM was able to show.

Both the GEOTEM and the VTEM surveys should be viewed as superior to any of the past, ground-based surveys.

The VTEM conductor closest to the GEOTEM conductor disagrees by 100m ground distance.

Keating Coefficient

Figure 6 presents the VTEM conductors and SGH anomalies, overlaid onto map 82055. Map 82055 shows Keating anomalies, which are helpful for identifying steeply-dipping bodies.

The Keating anomaly agrees closely with one of the secondary SGH anomalies identified in Dale Sutherland's report (Appendix I) and forms a potential 2nd drill target that is proximal to the main target.

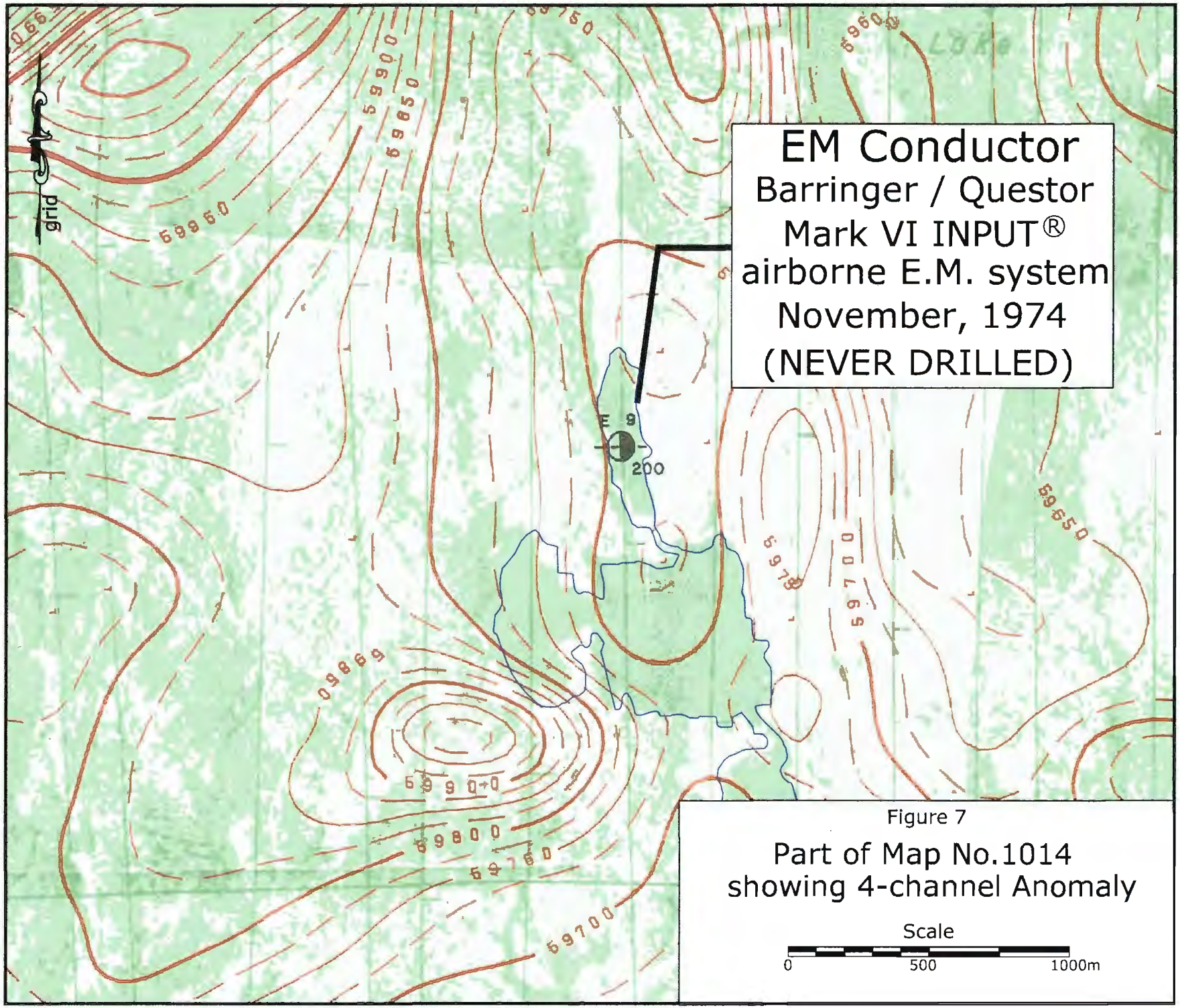
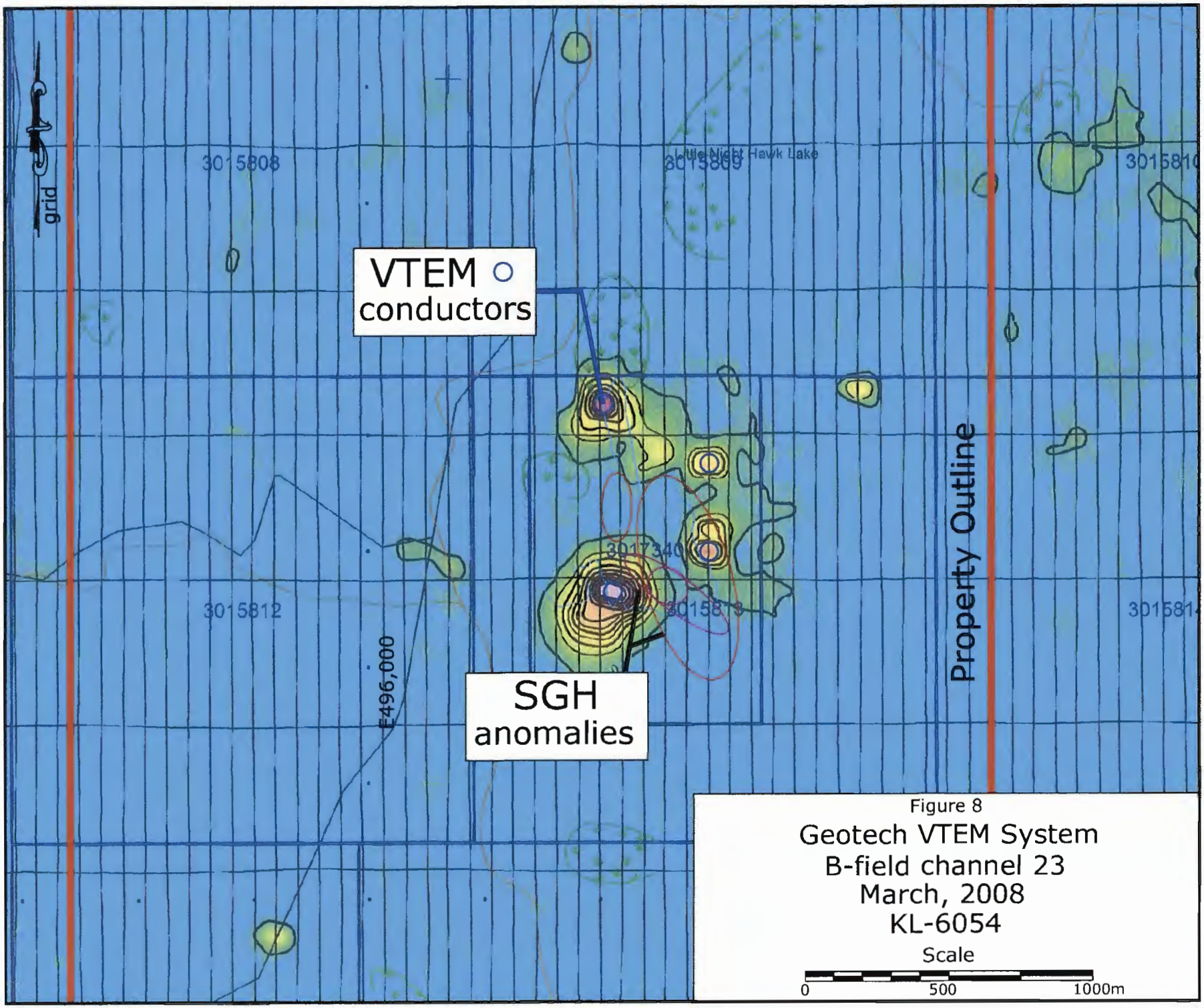
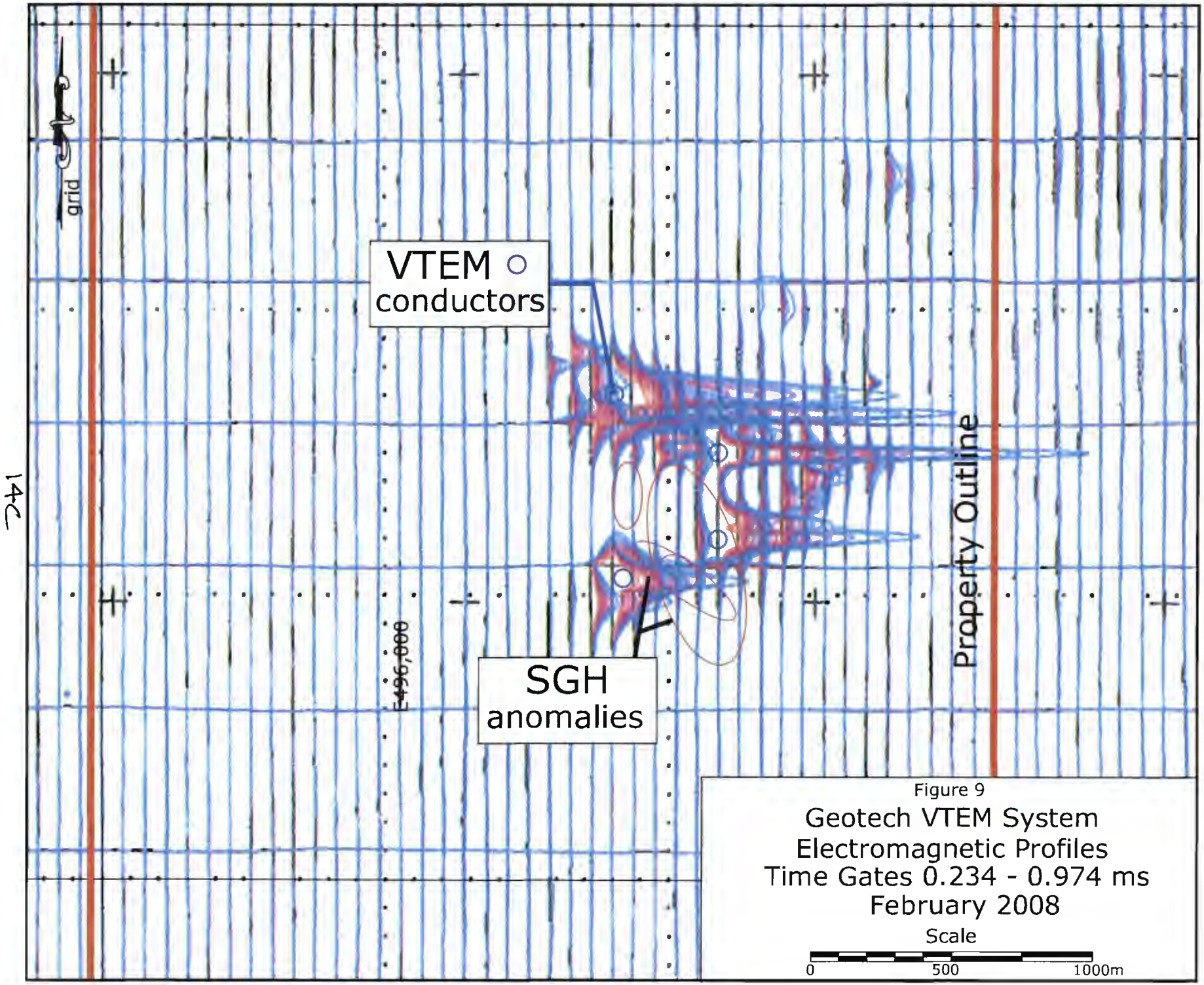


Figure 7

Part of Map No.1014
showing 4-channel Anomaly


grid
3015808
Little Night Hawk Lake
3015809
3015810
VTEM
conductors
3017340
3015812
3015813
3015814
Property Outline
E496,000
SGH
anomalies
Figure 8
Geotech VTEM System
B-field channel 23
March, 2008
KL-6054
Scale
0
500
1000m

148


grid
VTEM
conductors
SGH
anomalies
E496,000
Property Outline
Figure 9
Geotech VTEM System
Electromagnetic Profiles
Time Gates 0.234 - 0.974 ms
February 2008
Scale
0
500
1000m

14C

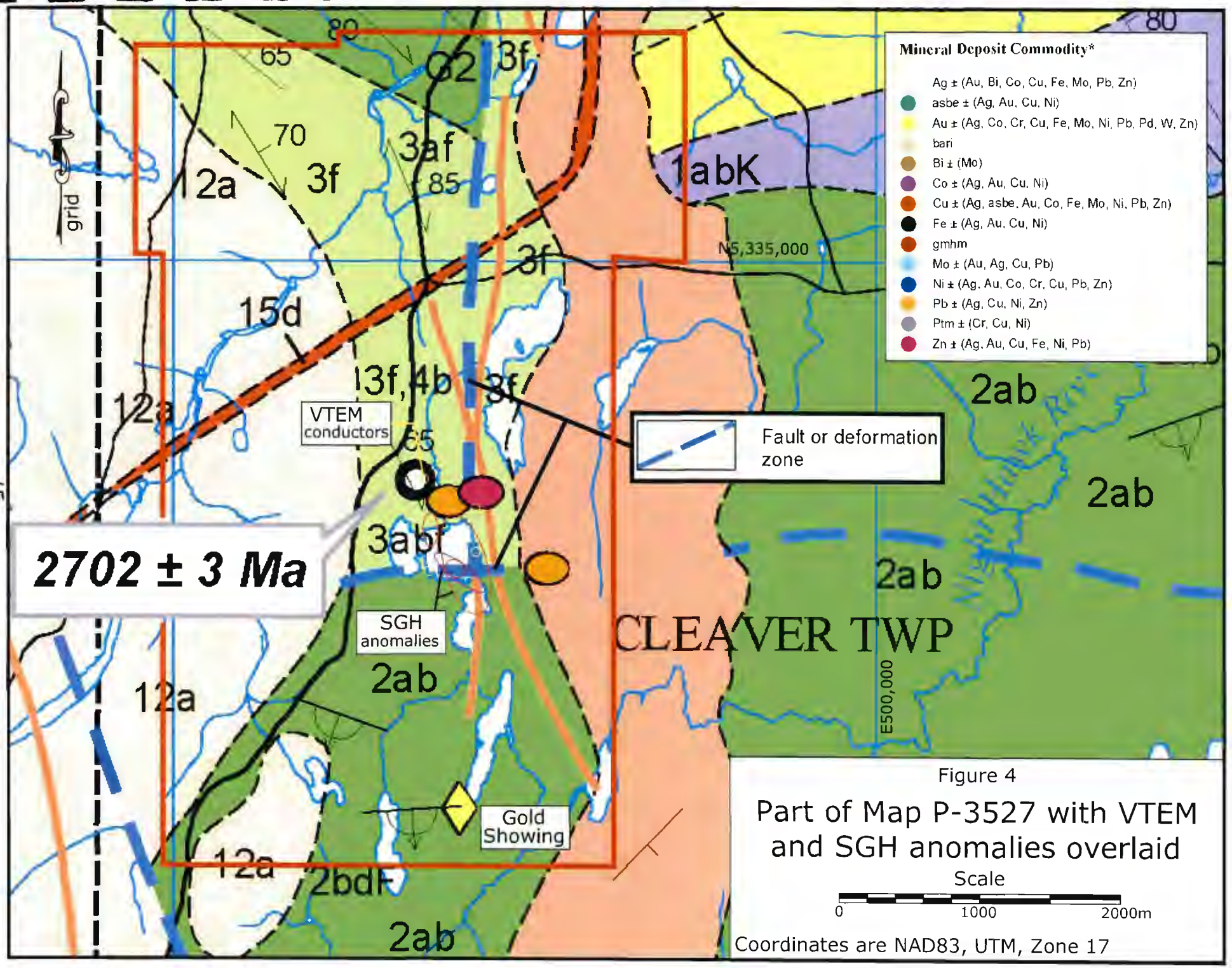


Figure 4

Part of Map P-3527 with VTEM and SGH anomalies overlaid

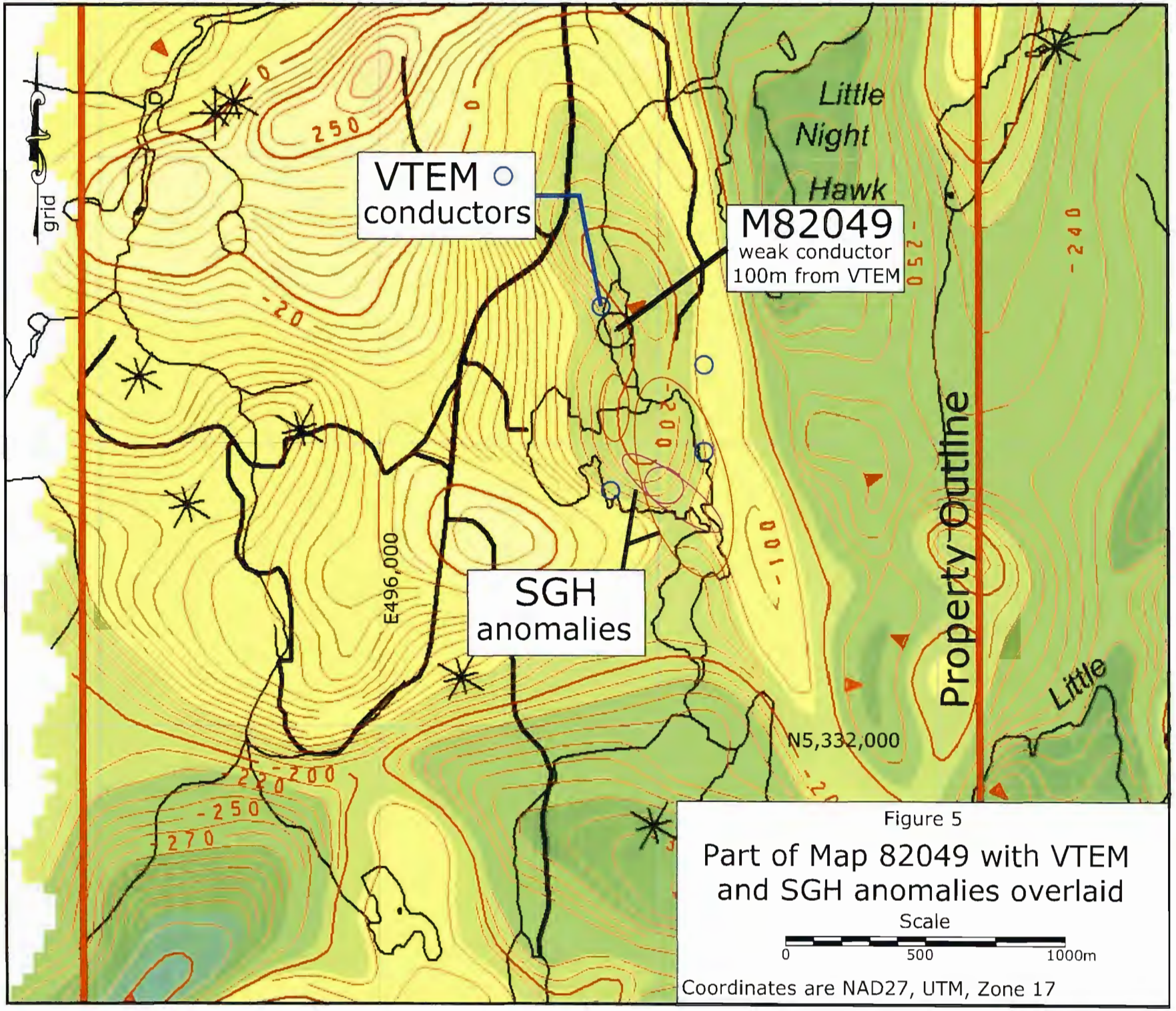


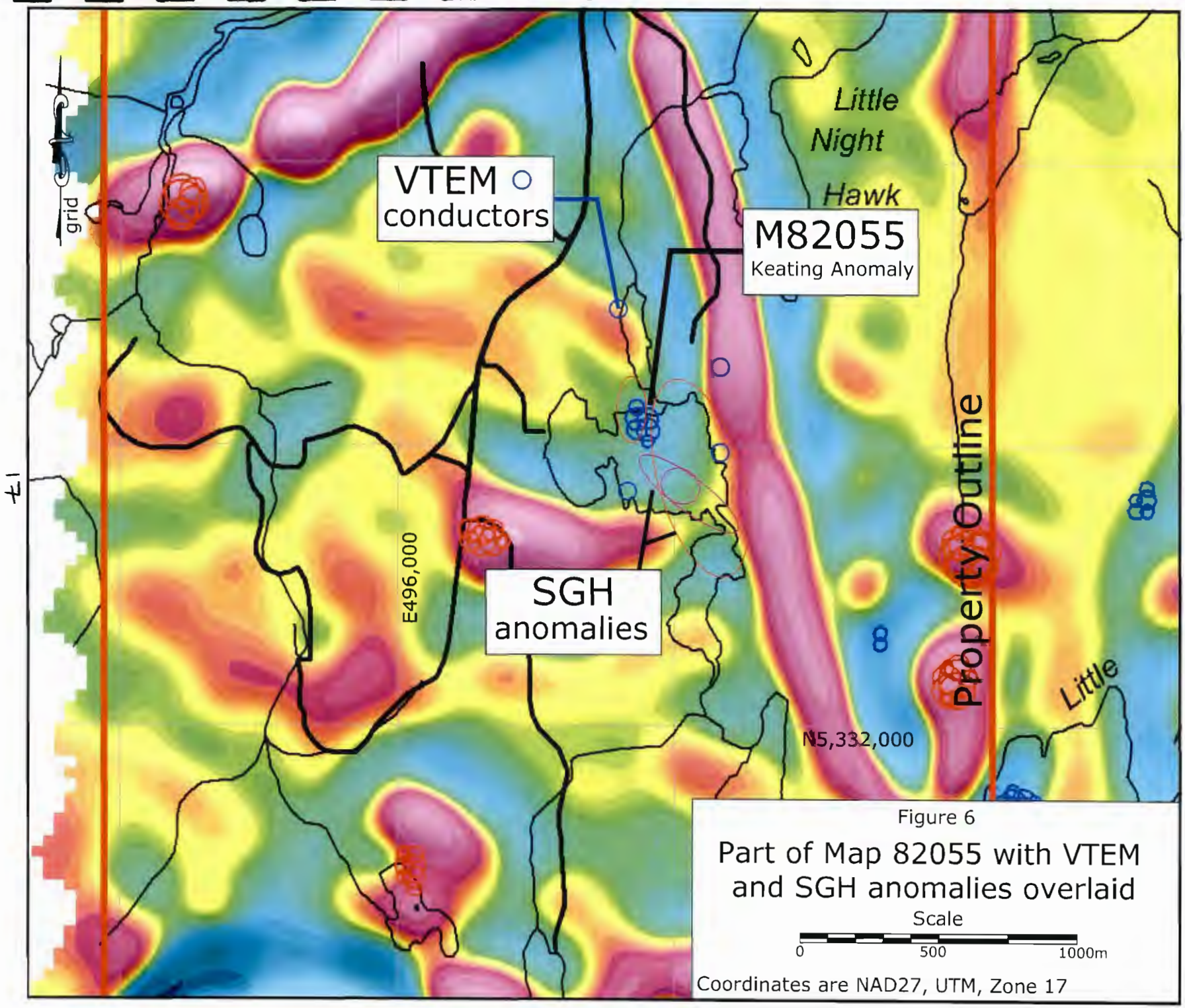
Figure 5

Part of Map 82049 with VTEM and SGH anomalies overlaid

Scale

0 500 1000m

Coordinates are NAD27, UTM, Zone 17


grid
VTEM
conductors
M82055
Keating Anomaly
Little
Night
Hawk
Property Outline
SGH
anomalies
E496,000
N5,332,000
Little
Figure 6
Part of Map 82055 with VTEM and SGH anomalies overlaid
Scale
0
500
1000m
Coordinates are NAD27, UTM, Zone 17

Appendix I

SGH Reports for VMS and Gold

SGH – SOIL GAS HYDROCARBON
Predictive Geochemistry

for

TRUE NORTH MINERAL LABORATORIES

"CLEAVER SURVEY"

September 16, 2011

** Dale Sutherland,*

Activation Laboratories Ltd

(- author, originator)*

EVALUATION OF SOIL SAMPLES

DATA EXPLORATION FOR: "VMS" TARGETS

SGH VMS TEMPLATE USED FOR THIS REPORT

Workorder: A11-7345

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PREFACE

THIS "STANDARD" SGH INTERPRETATION REPORT:

The purpose of this Soil Gas Hydrocarbon (SGH) interpretation "Standard Report" is to ensure that clients and other potential reviewers of the results have a good understanding of this organic, deep penetrating geochemistry. As SGH provides such a large data set and is not interpreted in the same way as inorganic geochemistries, this report enables the user to realize the results in a timely fashion and capitalizes on years of research and development since the inception of SGH in 1976 combined with the knowledge obtained by Activation Laboratories through the interpretation of SGH data from over hundreds of surveys for a wide variety of target types in various lithologies from many geographical locations. The report is compulsory as it is the only known organic geochemistry that, in spite of the name, uses non-gaseous semi-volatile organic compounds interpreted using a forensic signature approach It is based solely on SGH data and does not include the consideration or interpretation from any other geochemistry (inorganic), geology, or geophysics that may exist related to this survey area(s). This report can also provide evidence of project maintenance. To keep the price to a minimum and to provide as short a turnaround time as practically possible, usually only one SGH Pathfinder Class map is illustrated in a "Standard Report" with an applied interpretation although several other SGH Pathfinder Class maps are used and referenced.

"SUPPLEMENTAL REPORT": ($ 1,500.00, as of July 1, 2011)

Those clients who have determined that these SGH results will add an important aspect to their exploration effort can request a "Supplemental Report". This report contains the additional SGH Pathfinder Classes and an explanation of their use in the SGH interpretation that supports the initial applied "Rating" for the survey as a relative comparison to the results previously obtained in case studies that were used to create the SGH template for the general target type.

"ADDITIONAL INTERPRETATION": ($ 1,500.00, as of July 1, 2011)

The SGH data can be interpreted multiple times in comparison to a variety of SGH templates developed for exploration for different mineral targets or petroleum plays. The samples do not have to be reanalyzed. This can be addressed as a separate section of a report or as a separate report based on the client's wishes. The price is per survey area, e.g. if there are two projects in a submission, perhaps a North area and South area, and both survey areas are to be interpreted for say Gold and Copper, the first interpretation is included in the SGH analysis price, the second interpretation for each area would be priced at $1,500 per area, thus a total of $3,000.

"BASIC OR SUPPLEMENTAL REPORT GIS PACKAGE": ($ 120.00)

Those clients that wish to import the SGH results into their GIS software can request a "GIS Package", which will include the geo-referenced image files that reflect the mapped SGH Pathfinder Class or Classes contained in the Standard or Supplemental Report and an Excel CSV file(s) containing the associated Class Sum data.

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SOIL GAS HYDROCARBON (SGH) GEOCHEMISTRY – OVERVIEW

In the search for minerals and elements, geology requires tools to assess the location and potential quantity of minerals and ores. In the past people looked at the landscape to find the deposit. Similar landscapes indicate similar mineral and metal deposits. This is searching on a macro level, while geochemistry is searching on a micro level. Organic material requires many minerals and elements, so organic materials can be biomarker of the present of the minerals and elements.

SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. The analysis involves the testing for 162 hydrocarbon compounds in the C5-C17 carbon series range applicable to a wide variety of sample types. SGH has been successful for delineating targets found at over 500 metres in depth. Samples of various media have been successfully analyzed such as soil (any horizon), drill core, rock, peat, lake-bottom sediments and even snow. The SGH analysis incorporates a very weak leach, essentially aqueous, that only extracts the surficial bound hydrocarbon compounds and those compounds in interstitial spaces around the sample particles. These are the hydrocarbons that have been mobilized from the target depth. SGH is unique and should not be confused with other hydrocarbon tests or traditional analyses that measure C1 (Methane) to C5 (Pentane) or other gases. SGH is also different from soil hydrocarbon tests that thermally extracts or desorbs all of the hydrocarbons from the whole soil sample. This test is less specific as it does not separate the hydrocarbons and thus does not identify or measure the responses as precisely. These tests also do not use a forensic approach to identification. The hydrocarbons in the SGH extract are separated by high resolution capillary column gas chromatography to isolate, confirm, and measure the presence of only the individual hydrocarbons that have been found to be of interest from initial research and development and from performance testing in two Canadian Mining Industry Research Organization (CAMIRO) projects (97E04 and 01E02).

Over the past 14 years of research, Activation Laboratories Ltd. has developed an in-depth understanding of the unique SGH signatures associated with different commodity targets. Using a forensic approach we have developed target signatures or templates for identification, and the understanding of the expected geochromatography that is exhibited by each class of SGH compounds. In 2004 we began to include an SGH interpretation report delivered with the data to enable our clients to realize the complete value and understanding of the SGH results in the shortest time frame and provide the benefit from past research sponsored by Actlabs, CAMIRO, OMET and other projects.

SGH has attracted the attention of a large number of Exploration companies. In the above mentioned research projects the sponsors have included (in no order): Western Mining Corporation, BHP-Billiton, Inco, Noranda, Outokumpu, Xstrata, Cameco, Cominco, Rio Algom, Alberta Geological Survey, Ontario Geological Survey, Manitoba Geological Survey and OMET. Further, beyond this research, Activation Laboratories Ltd. has interpreted the SGH data for over 400 targets from clients since January of 2004. In both CAMIRO research projects over known mineralization and in exploration projects over unknown targets, SGH has performed exceptionally well. As an example, in

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the first CAMIRO research project that commenced in 1997 (Project 97E04), there were 10 study areas that were submitted blindly to Actlabs. These study sites were selected since other inorganic geochemistries were unsuccessful at illustrating anomalies related to the target.

Although Actlabs was only provided with the samples and their coordinates, SGH was able to locate the blind mineralization with exceptional accuracy in 9 of the 10 surveys. SGH has recently been very successful in exploration and discovery of unknown targets e.g. Golden Band Resources drilled an SGH anomaly and discovered a significant vein containing "visible" gold. (www.goldenbandresources.com)

Sample Type and Survey Design It is highly recommended that a ***minimum*** of 50 sample "locations" is preferred to obtain enough samples into background areas on both sides of *small* suspected targets (wet gas plays, Kimberlite pipes, Uranium Breccia pipes, veins, etc.). SGH is not interpreted in the same way as inorganic based geochemistries. SGH must have enough samples over both the target and background areas in order to fully study the dispersion patterns or geochromatography of the SGH classes of compounds. Based on our minimum recommendation of at least 50 sample locations we further suggest that all samples be *evenly spaced* with about one-third of the samples over the target and one-third on each side of the target in order for SGH to be used for exploration. Targets other than gas plays, pipes, dykes or veins usually require additional samples to represent both the target and background areas.

SGH has been shown to be very robust to the use of different sample types even "within" the same survey or transect. Research has illustrated that it is far more important to the ultimate interpretation of the results to take a complete sample transect or grid than to skip samples due to different sample media. The most ideal natural sample is still believed to be soil from the "Upper B-Horizon", however excellent results can also be obtained from other soil horizons, humus, peat, lake-bottom sediments, and even snow. The sampling design is suggested to use evenly spaced samples from 15 metres to 200 metres and line spacing from 50 metres to 500 metres depending on the size and type of target. A 4:1 ratio is suggested, however, larger orientation surveys have also been successful. Ideally even large grids should have one-third of the samples over the target and two-thirds of the samples into anticipated background areas. This will allow the proper assessment of the SGH geochromatographic vectoring and background site signature levels with minimal bias. Individual samples taken at significant distances from the main survey area to represent background are not of value in the SGH interpretation as SGH results are not background subtracted. Samples can be drip dried in the field and do not need special preservation for shipping and has been specifically designed to avoid common contaminants from sample handling and shipping. SGH has also been shown to be robust to cultural activities even to the point that successful results and interpretation has been obtained from roadside right-of-ways.

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In conclusion, the conditions for the sample type and survey design include:

- Minimum of 50 samples "locations"
- Evenly spaced in the target area – one-third over the target and one-third on each side of the target
- Different sample types even "within" the same survey or transect
- Evenly spaced samples – lines spaced in a 4:1 ratio
- Samples can be drip dried.
- No special preservation for shipping is needed.

Sample Preparation and Analysis

Upon receipt at Activation Laboratories the samples are air-dried in isolated and dedicated environmentally controlled rooms set to 40°C. The dried samples are then sieved. In the sieving process, it is important that compressed air is not used to clean the sieves between samples as trace amounts of compressor oils "may" poison the samples and significantly affect some target signatures. At Activation Laboratories a vacuum is used to clean the sieve between each sample. The -60 mesh sieve fraction (<250 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected and packaged in a Kraft paper envelope and transported from our sample preparation building to our analytical building on the same street in Ancaster Ontario. Each sample is then extracted, separated by gas chromatography and analyzed by mass spectrometry using customized parameters enabling the highly specific detection of the 162 targeted hydrocarbons at a *reporting limit* of one part-per-trillion (ppt). This trace level limit of reporting is critical to the detection of these hydrocarbons that, through research, have been found to be related at least in part to the breakdown and release of hydrocarbons from the death phase of microbes directly interacting with a deposit at depth. The hydrocarbon signatures are directly linked to the deposit type, which is used as a food source. The hydrocarbons that are mobilized and metabolized by the microbes are released in the death phase of each successive generation. Very few of the hydrocarbons measured are actually due to microbe cell structure, or hydrocarbons present or formed in the genesis of the deposit or from anthropogenic contamination. The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

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Mobilized Inorganic Geochemical Anomalies

It is important to note that SGH is essentially "*blind*" to any inorganic content in samples as only *organic* compounds as hydrocarbons are measured. Thus inorganic geochemical surface anomalies that have migrated away from the mineral source, and thus may be interpreted and found to be a false target location, is not detected and does not affect SGH results. This fact is of great advantage when comparing the SGH results to inorganic geochemical results. If there is agreement in the location of the anomalies between the organic and inorganic technique, such as Actlabs' Enzyme Leach, a significant increase in confidence in the target location can be realized. If there is no agreement or a shift in the location of the anomalies between the techniques, the inorganic anomaly may have been mobilized in the surficial environment.

The Nugget Effect

As SGH is "blind" to the inorganic content in the survey samples, any concern of a "nugget effect" will not be encountered with SGH data. A "nugget effect" may be of a concern for inorganic geochemistries from surveys over copper, gold, lead, nickel, etc. type targets.

SGH Interpretation Report

All SGH submissions must be accompanied by relative or UTM coordinates so that we may ensure that the sample survey design is appropriate for use with SGH, and to provide an SGH interpretation with the results. In our interpretation procedure, we separate the results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, thiophenes, aromatic, and polyaromatic compounds. Note that none of the SGH hydrocarbons are "gaseous" at room temperature and pressure. The classes are then evaluated in terms of their geochromatography and for coincident compound class anomalies that are unique to different types of mineralization. Actlabs uses a six point scale in assigning a subjective rating of similarity of the SGH signatures found in the submitted survey to signatures previously reviewed and researched from known case studies over the same commodity type. Also factored into this rating is the appropriateness of the survey and amount of data/sample locations that is available for interpretation. This rating scale is described in detail in the following section.

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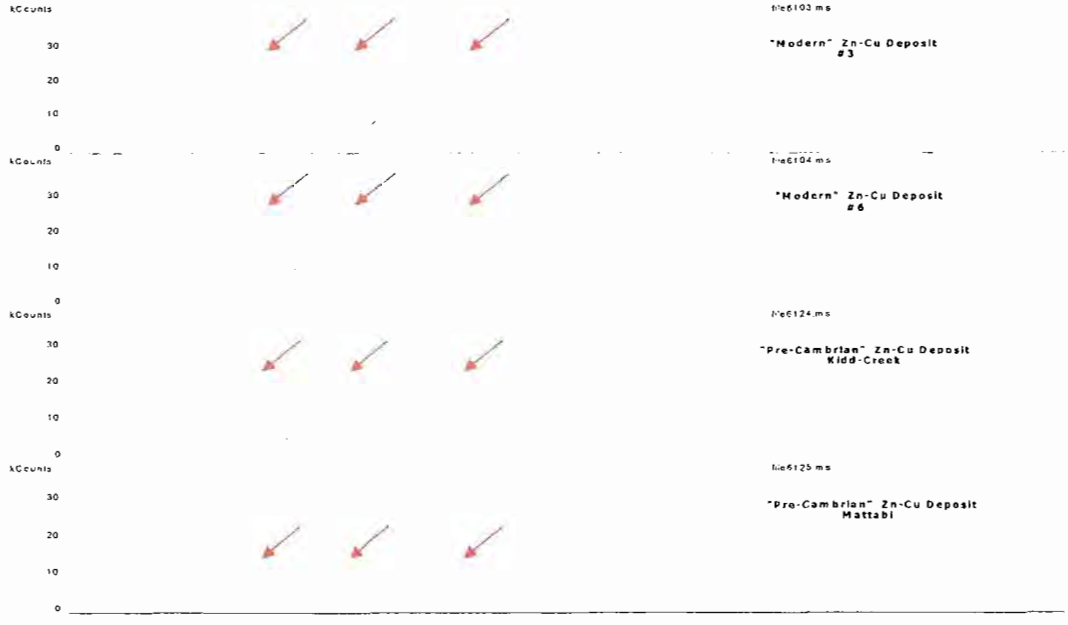
SGH – FORENSIC GEOCHEMICAL SIGNATURES

The following analyses examine the Volcanic Massive Sulphide (VMS) deposit in various known locations. These analyses show how the gas chromatography indicates the reality of deposits. For all the profiles in this section, the red arrows indicate the signature of the VMS, which have all been found by organic geochemistry. These forensic geochemical signatures are shown to consistent for similar target areas; therefore, the analyses are reliable indicators for the presence of VMS.

One of the first experiments in 1996 in the development of the SGH analysis was to observe if an SGH response could be obtained directly from an ore sample. From office shelf specimens, small rock chips were obtained which were then crushed and milled. The fine pulp obtained was then subjected to the SGH analysis. These shelf specimen samples were from well known VMS deposits of the Mattabi deposit from the Archean Sturgeon Lake Camp in Northwestern Ontario and from the Kidd Creek Archean volcanic-hosted copper-zinc deposit. Even these specimen samples contain a geochemical record of the hydrocarbons produced by the bacteria that had been feeding on these deposits at depth. As a comparison, SGH analysis were similarly conducted on modern-day VMS ore samples taken from a "black smoker" hydrothermal volcanic vent from the deep sea bed of the Juan de Fuca Ridge where high concentrations of microbial growth was also known to exist. The raw data profiles as GC/MS Total Ion Chromatograms are shown below to illustrate the *"visible"* portion of the VMS signature obtained from the SGH analysis.



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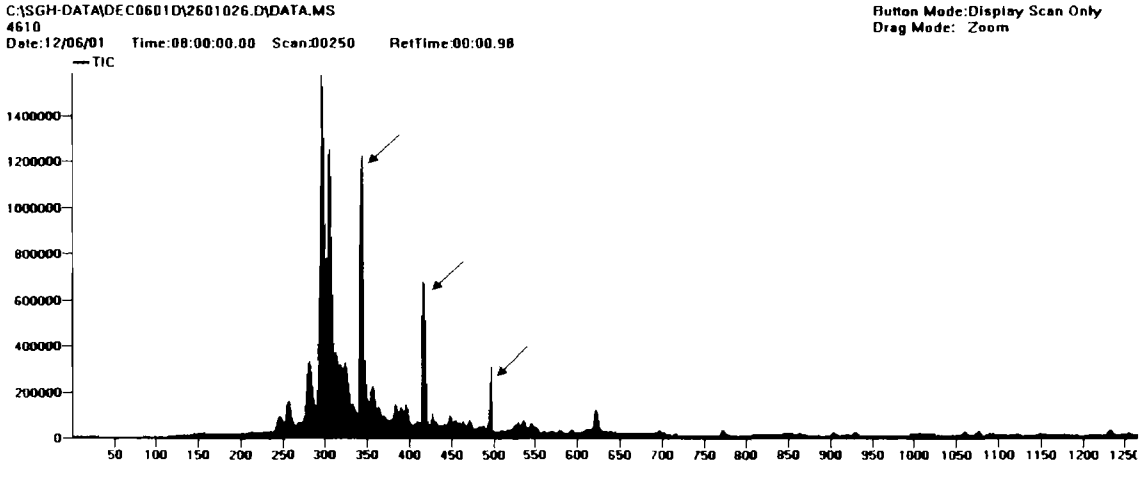
The above profiles are:

- First profile: Samples from modern day "black smokers"
- Second profile: Samples from modern day "black smokers"
- Third profile: Samples from Pre-Cambrian Zn-Cu Kidd Creek deposit
- Fourth profile: Samples from Mattabi deposit

The red arrows point to three compounds that are a *portion* of the SGH signature for VMS type deposits. This visible portion of the VMS signature of hydrocarbons can easily be seen in the analysis of each of these four samples.

The next question in our early objectives was to see if this SGH signature could also be observed in *surficial soil samples* that had been taken over VMS deposits. Through our research projects, soil samples were obtained from over the Ruttan Cu-Zn VMS deposit near Leaf Rapids, Manitoba and located in the Paleoproterozoic Rusty Lake greenstone belt. The profile obtained, as observed in the raw GC/MS chromatogram, is shown in this next image below:



The three compounds indicated by the red arrows represent the same *visible portion* of the VMS signature observed from the modern day black smoker samples and the ore samples taken from the Mattabi and Kidd Creek, even though this soil was taken from over a different VMS deposit in a geographically different area. Is this coincidence?

Another soil sample was obtained from Noranda's Gilmour South base-metal occurrence in the Bathurst Mining camp in northern New Brunswick. As shown below, this sample contained a very

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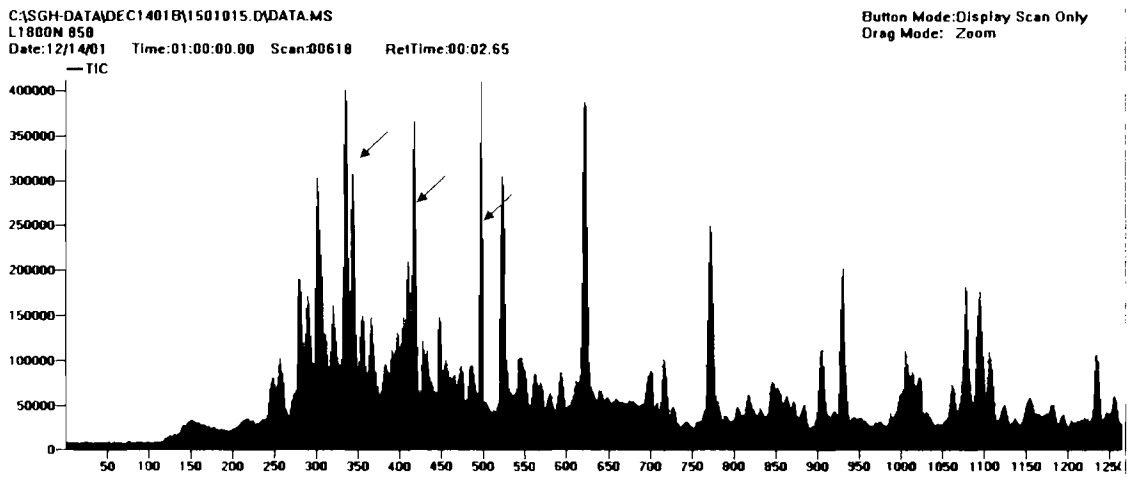
complex SGH signature, however the visible portion of the VMS signature as indicated by the red arrows is still observed as in the black smoker, Mattabi and Kidd Creek ore samples.



In research conducted by the Ontario Geological Survey, this same portion of the SGH signature was also observed over the VMS deposit at Cross Lake in Ontario. **Note that the visible signature shown as the three compounds indicated by the red arrows is only a small portion of the complete SGH VMS signature**. The full VMS signature is made up of at least three groups, as three organic chemical classes, that together contain at least 35 of the individual SGH hydrocarbons.

The chromatograms shown on the preceding page from the GC/MS analysis are not used directly in the interpretation of SGH data. As we are only interested in a specific list of 162 hydrocarbons, the mass spectrometer and associated software programs specifically identifies the hydrocarbons of interest, runs calculations using relative responses to a short list of hydrocarbons used as standards, and develops an Excel spreadsheet of semi-quantitative concentration data to represent the sample. Thus the SGH results for a sample, like that observed in ore from the Ruttan, are filtered to obtain the concentrations for the specific 162 hydrocarbons. A simple bar graph drawn from the Excel spreadsheet of the hydrocarbons and their concentrations results in a DNA like *forensic SGH signature* as shown below. The portion discussed hear as the "visible" SGH VMS signature in the GC/MS chromatograms, is again shown by the red arrows.

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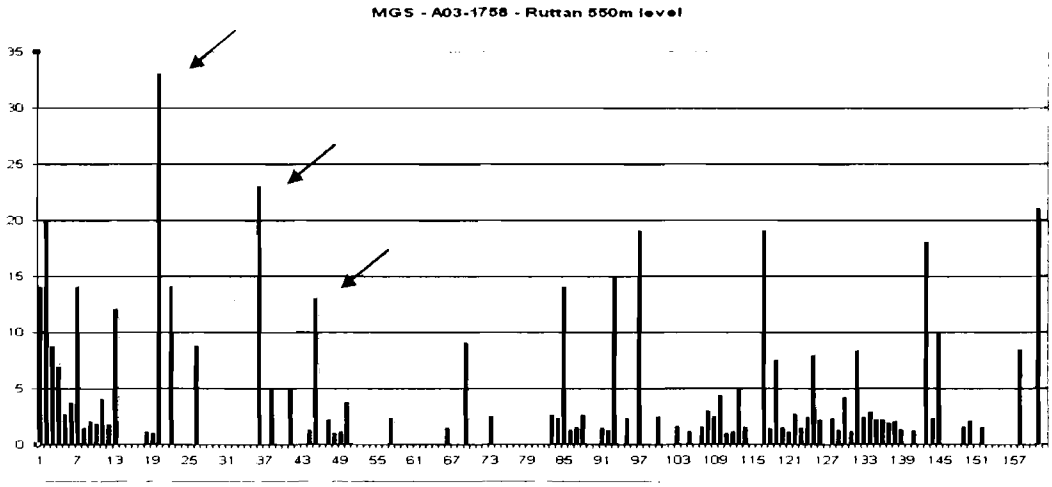

Through the work done in the SGH CAMIRO research projects, it was observed that the hydrocarbon signature produced by the SGH technique appeared to also be able to be used to differentiate barren from ore-bearing conductors. This was explored further through the submission and analysis of specific specimen samples that represented a barren pyritic conductor and a barren graphitic conductor.

The GC/MS chromatograms from these two specimens are compared to that obtained from the Kidd-Creek ore as shown below. This diagram conclusively shows that the SGH signatures obtained from the two types of barren conductors are completely different than that obtained by SGH over VMS type ore. SGH is thus able to differentiate between ore-bearing conductors and barren conductors as **the Forensic SGH Geochemical signature is different.**

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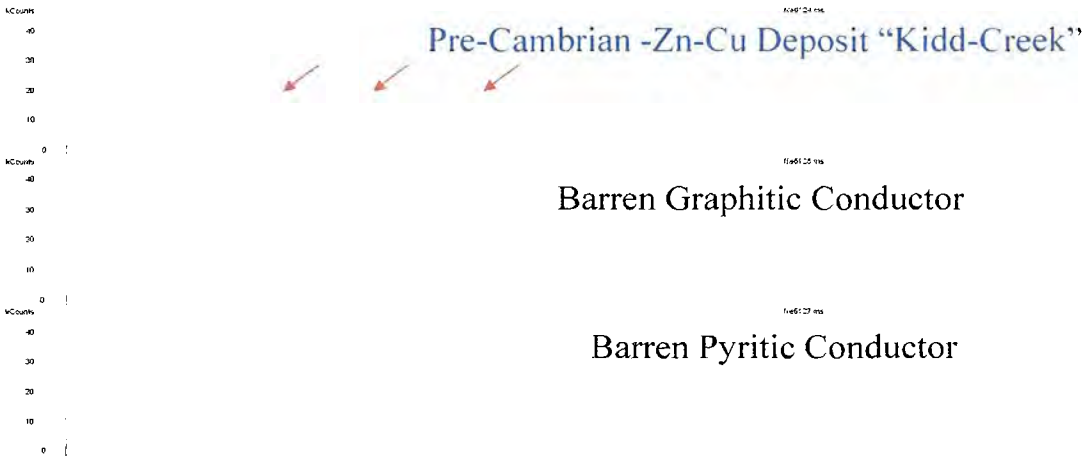

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "REDOX cell locator". Many SGH surveys for Gold and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo" type SGH anomalies are all typically observed from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

The VMS template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. Again, at least three Pathfinder Class group maps, associated with the SGH signature for VMS, must be present to begin to be considered for assignment of a good rating. The Pathfinder Class anomalies in these maps must logically concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class, for a specific area.

The interpretation development history for VMS SGH Pathfinder Class map(s) shown in this report is similar to the development history for other target types. The reader should not draw a conclusion that SGH is used only for sulphide based mineralization as some of the most intense SGH anomaly has been associated with Kimberlites where sulphides are essentially not present.

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SGH DATA QUALITY

Reporting Limit

The SGH Excel spreadsheet of results contains the raw unaltered concentrations of the individual SGH compounds in units of "part-per-trillion" (ppt). The reporting of these ultra low levels is vital to the measurement of the small amounts of hydrocarbons now known to be leached/metabolized and subsequently released by dead bacteria that have been interacting with the ore at depth. To ensure that the data has a high level of confidence, a "reporting limit" is used. The reporting limit of 1 ppt actually represents a level of confidence of approximately 5 standard deviations where SGH data is assured to be "real" and non-zero. Thus in SGH the use of a reporting limit automatically removes site variability, and there is no need to further background subtract any data as the reporting limit has already filtered out any site background effects. Thus we recommend that all data that is equal to or greater than 2 ppt should be used in any data review. It is important to review all SGH data as low values that may be the centre of halo anomalies and higher values as apical anomalies or as halo ridges are all important.

Laboratory Replicate Analysis

A laboratory replicate is a sample taken randomly from the submitted survey being analyzed and are not unrelated samples taken from some large stockpile of bulk material. In the Organics laboratory an equal portion of this sieved sample, or pulp, is taken and analyzed in the same manner using the Gas Chromatography/Mass Spectrometer. The comparison of laboratory replicate and field duplicate results for chemical tests in the parts-per-million or even parts-per-billion range has typically been done using an absolute "relative percent difference (RPD)" statistic which is an easy proxy for error estimation rather than a more complete analysis of precision as specified by Thompson and Howarth. An RPD statistic is not appropriate for SGH results as the reporting limit for SGH is *1 part-per-trillion*. Further, *SGH is a semi-quantitative technique* and was not designed to have the same level of precision as other less sensitive geochemistry's as it is only used as an exploration tool and not for any assay work. SGH is also designed to cover a wide range of organic compounds with an unprecedented 162 compounds being measured for each sample. In order to analyze such a wide molecular weight range of compounds, sacrifices were made to the variability especially in the low molecular weight range of the SGH analysis. The result is that the first fifteen SGH compounds in the Excel spreadsheet is expected to exhibit more imprecision than the other 147 compounds. An SGH laboratory replicate is a large set of data for comparison even for just a few pairs of analyses. Precision calculations using a Thompson and Howarth approach should only be used for estimating error in individual measurements, and not for describing the average error in a larger data set. In geochemical exploration geochemists seek concentration patterns to interpret and thus rigorous precision in individual samples is not required because the concentrations of many samples are interpreted collectively. For these reasons recent and independent research at Acadia University in Canada promote that a percent Coefficient of Variation (%CV) should be used as a universal measurement of relative error in all geochemical applications. As SGH results are a relatively large data set for nearly all submissions, %CV is a better statistic for use with SGH. By

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using %CV, the concentration of duplicate pairs is irrelevant because the units of concentration cancel out in the formation of the coefficient of variation ratio. For SGH, the %CV is calculated on all values ≥ 2 ppt. These values are averaged and represent a value for each pair of replicate analysis of the sample. All of the %CV values for the replicates are then averaged to report one %CV value to represent the overall estimate of the relative error in the laboratory sub-sampling from the prepared samples, and any instrumental variability, in the SGH data set for the survey. Actlabs' has successfully addressed the analytical challenge to minimize analytical variability for such a large list of compounds. Thus as SGH is also interpreted as a signature and is solely used for exploration and not assay measurement, the data from SGH is *"fit for purpose"* as a geochemical exploration tool.

Historical SGH Precision

In the general history of geochemistry, studies indicate that a large component of total measurement error is introduced during the collection of the initial sample and in sub-sampling, and that only a subordinate amount of error in the result is introduced during preparation and analysis. A historical record encompassing many projects for SGH, including a wide variety of sample types, geology and geography, shows that the consistency and precision for the analysis of SGH *is excellent* with an overall precision of 6.8% Coefficient of Variation (%CV). When last calculated, this number has a range having a maximum of 12.4% CV, a minimum of 3.0% CV, with a standard deviation of 1.6%, in a population made up of over 400 targets (over 45,000 samples) interpreted since June of 2004. Again the precision of 6.8% CV included all of the sample types as soil from different horizons, peat, till, humus, lake-bottom sediments, ocean-bottom sediments, and even snow. When field duplicates have been revealed to us, we have found that the precision of the field duplicates are in the range of about 9 to 12 %CV. As SGH is interpreted using a combination of compounds as a chemical "class" or signature, the affect of a few concentrations that may be imprecise in a direct comparison of duplicates is not significant. Further, projects that have been re-sampled at different times or seasons are expected to have different SGH concentrations. The SGH anomalies may not be in exactly the same position or of the same intensity due to variable conditions that may have affected the dispersion of different pathfinder classes. However, the SGH "signature" as to the presence of the specific mix of SGH pathfinder classes will definitely still exist, and will retain the ability to identify the deposit type and vector to the same target location.

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LABORATORY MATERIALS BLANK – QUALITY ASSURANCE (LMB-QA)

The Laboratory Materials Blank Quality Assurance measurements (LMB-QA) shown in the SGH spreadsheet of results are matrix free blanks analyzed for SGH. These blanks are not standard laboratory blanks as they do not accurately reflect an amount expected to be from laboratory handling or laboratory conditions that may be present and affect the sample analysis result. The LMB-QA measurements are a pre-warning system to only detect any contamination originating from laboratory glassware, vials or caps. As there is no substrate to emulate the sample matrix, the full solvating power of the SGH leaching solution, effectively a water leach, is fully directed at the small surface area of the glassware, vials or caps. In a sample analysis the solvating power of the SGH leaching solution is distributed between the large sample surface area (from soil, humus, sediments, peat, till, etc.) and the relatively small contribution from the laboratory materials surfaces. The sample matrix also buffers the solvating or leaching effect in the sample versus the more vigorous leaching of the laboratory materials which do not experience this buffering effect. Thus the level of the LMB-QA reported is biased high relative to the sample concentration and the actual contribution of the laboratory reagents, equipment, handling, etc. to the values in samples is significantly lower. This situation in organic laboratory analysis only occurs at such extremely low part-per-trillion (ppt) measurement levels. This is one of the reasons that SGH uses a reporting limit and not a detection limit. The 1 ppt reporting limit used in the SGH spreadsheet of raw concentration data is 3 to 5 times greater than a detection limit. The reporting limit automatically filters out analytical noise, the actual LMB-QA, and most of the sample survey site background. This has been proven as SGH values of 1 to 3 parts-per-trillion (ppt) have very often illustrated the outline of anomalies directly related to mineral targets. **Thus all SGH values greater than or equal to 1 or 2 ppt should be used as reliable values for interpretations.**

The LMB-QA values thus should not be used to background subtract any SGH data. The LMB-QA values are only an early warning as a quality assurance procedure to indicate the relative cleanliness of laboratory glassware, vials, caps, and the laboratory water supply at the ppt concentration level. *Do not subtract the LMB-QA values from SGH sample data.*

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SGH DATA INTERPRETATION

GEOCHEMICAL ANOMALY THRESHOLD VALUE

In the interpretation of "inorganic" geochemical data one of the determinations to be made is to calculate a "Threshold" value above which data is considered anomalous. This is done on an element by element basis. In the interpretation of this "organic" geochemical data this determination is done differently. The determination of a threshold value is not calculated for each hydrocarbon compound. The determination of a threshold value is also a concentration below which geochemical data is considered as "noise" for the purposes of geochemical interpretation. As discussed, SGH uses a "Reporting Limit" instead of some type of Detection Limit. The amount of noise that is already eliminated in the data, as below the Reporting Limit of 1 part-per-trillion (shown in the data spreadsheet as "-1" as "not-detected at a Reporting Limit of 1 ppt") is equivalent to approximately 5 standard deviations of variability. *To thus calculate an additional Threshold Value is a loss of real and valuable data.* Further, in the interpretation of SGH data, individual compounds are not considered (unless explicitly mentioned in the report). The interpretation of SGH data is exclusively conducted by "compound chemical class" which is the sum of four to fourteen individual hydrocarbons in the same organic chemical class as these compounds naturally have the same chemical properties that ultimately define their spatial dispersion characteristics in their rise from a mineral target through the overburden. This combined class is more reliable than the measurement of any one compound. SGH also eliminates the need for a Threshold value determination above the Reporting Limit due to the "high specificity" of the specific hydrocarbons and the classes they form. Each of the hydrocarbons has been hand selected due to their lower probability of being found in general surface soils. Further, only those classes where the majority of the compounds are detected above the Reporting Limit are considered in the interpretation. This defines the SGH geochemistry as having less geochemical noise due to the use of a reporting limit and as having higher confidence in the use of groups (classes) of data instead of individual compounds. However the most important aspect of interpretation is the use of a forensic signature. At least three specific "Pathfinder" classes, based on the combinations or template of classes we have developed, must be present to define the hydrocarbon signature to confidently predict the presence of a specific type of mineral target. *Do not calculate another Threshold value.* **Fact:** It has been proven many times that important SGH anomalies that depict mineralization at depth can exist even with data at 3 ppt.

SGH PATHFINDER CLASS MAGNITUDE

The magnitude of any individual concentration or that of a hydrocarbon class *does not imply* that the data is of more importance or that mineralization is of higher quantity or grade. SGH interpretation must use the review of the combination of specific hydrocarbon classes to make any interpretation.

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SGH DATA LEVELING

The combination of SGH data from different field sampling events has rarely required leveling in order to combine survey grids. The only circumstances that have occasionally required leveling has been the combination of samples that are very fine in texture, thus having a combined large surface area to samples of peat that may be in nearby areas. Even after maceration of the peat and in using the maximum size of sample amenable to this test method, peat samples have a significantly lower surface area. Peat samples have only required leveling in one survey in the last 500 SGH interpretations.

In only the last year it has been observed that SGH data *may* require leveling when different field sampling events have significantly different soil temperature. It has been documented that only when "soil" samples are taken from "frozen" ground that data leveling may be required as frozen sample act as a frozen cap to the hydrocarbon flux and may collect a higher concentration of hydrocarbon compounds compared to sampling during seasons where the samples are not frozen. Only two surveys have required leveling in the last 500 SGH interpretations.

The author has taken introductory training in the leveling of geochemical data. If leveling is required, both data sets are reviewed in terms of maximum, minimum and average values for each SGH Pathfinder Class intended for use in the interpretation. Data in sectioned into quartiles and each section is assigned specific leveling factors that is then applied to one data set. It should be noted that any type of data leveling is an approximation.

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SGH RATING SYSTEM

DESCRIPTION

To date SGH has been found to be successful in the depiction of buried mineralization for Gold, Nickel, VMS, SEDEX, Uranium, IOCG, Base Metal, Polymetallic, and Copper, as well as for Kimberlites. SGH data has developed into a dual exploration tool. From the interpretation, a vertical projection of the predicted location of the target can be made as well as a statement on the rating of the comparability of the identification of the anticipated target type to that from known case studies, as an example: if the client anticipates the target to be a Gold deposit, what is the rating or comparability that the target is similar to the SGH results over a Gold deposit in Nunavut, shear hosted and sediment hosted deposits in Nevada, or Paleochannel Gold mineralization in Western Australia.

- **A rating of "6"** is the highest or best rating, and means that the SGH classes most important to describing a Gold related hydrocarbon signature are all present and consistently vector to the same location with well defined anomalies. To obtain this rating there also needs to be other SGH classes that when mapped lend support to the predicted location.

- **A rating of "5"** means that the SGH classes most important to describing a Gold signature are all present and consistently describe the same location with well defined anomalies. The SGH signatures may not be strong enough to also develop additional supporting classes.

- **A rating of "4"** means that the SGH classes most important to describing a Gold signature are mostly present describing the location with well defined anomalies. Supporting classes may also be present.

- **A rating of "3"** means that the SGH classes most important to describing a Gold signature are mostly present and describe the same location with fairly well defined anomalies. Some supporting classes may or may not be present.

- **A rating of "2"** means that some of the SGH classes most important to describing a Gold signature are present but a predicted location is difficult to determine. Some supporting classes may be present

- **A rating of "1"** is the lowest rating, and means that one of the SGH classes most important to describing a Gold signature is present but a predicted location is difficult to determine. Supporting classes are also not helpful.

The SGH rating is directly and significantly affected by the survey design. Small data sets, especially if significantly <50 sample locations, or transects/surveys that are geographically too short

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will automatically receive a lower rating no matter how impressive an SGH anomaly might be. When there is not enough sample locations to adequately review the SGH class geochromatography, or when the sample spacing is inadequate, or if the spacing is highly variable such that it biases the interpretation of the results, then the confidence in the interpretation of any geochemistry is adversely affected. The SGH rating is not just a rating of the agreement between the SGH pathfinder classes for a particular target type; it is a rating of the overall confidence in the SGH results from this particular survey. The interpretation is only based on the SGH results without any information from other geochemical, geological or geophysical information unless otherwise specified.

HISTORY & UNDERSTANDING

The subjective SGH rating system has been used since 2004 when Activation Laboratories started providing an SGH Interpretation Report with ever submission for SGH analysis to aid our clients in understanding this organic geochemistry and ensuring that they obtain the best results for their surveys. As explained in the previous section, the SGH rating is not just a rating of how definitive an SGH anomaly is, and it is not based just on the map(s) provided in this report. It is a rating of "confidence in the interpreted anomaly" from the combination of:

- (i) are the expected SGH Pathfinder Classes of compounds present from the template for this target type (one Pathfinder Class map is shown in the report, at least three must be present to adequately describe the correct signature for a particular target),
- (ii) how well do these SGH Pathfinder Classes agree in describing an particular area,
- (iii) how well does this agreement compare to SGH case studies over known targets of that type,
- (iv) how well is the interpreted anomaly defined by the survey (i.e. a single transect does not provide the same confidence as a complete grid of samples), and
- (v) is there at least a minimum of 50 sample locations in the survey so that there may be an adequate amount of data to observe the geochromatography of the different SGH Pathfinder Class of compounds.

The question often arises by clients as to the frequency of a rating, e.g. "how often is a rating of 5.0 given in an interpretation". To better understand this we present this review of the history of the SGH rating program since 2004 and some of the underlying situations that can affect the historical rating charts. Originally it was recommended that a minimum of 35 sample location be used for small target exploration, however it was quite quickly realized that this is often insufficient and at least 50 sample locations were required. In 2007 the rating scale was refined to include increments of 0.5 units rather than just integer values from 0 to 6.

A rating frequency may be biased high as most clients conduct an orientation study over a known target, thus several of these projects result in high ratings. Note that, at this time, the rating

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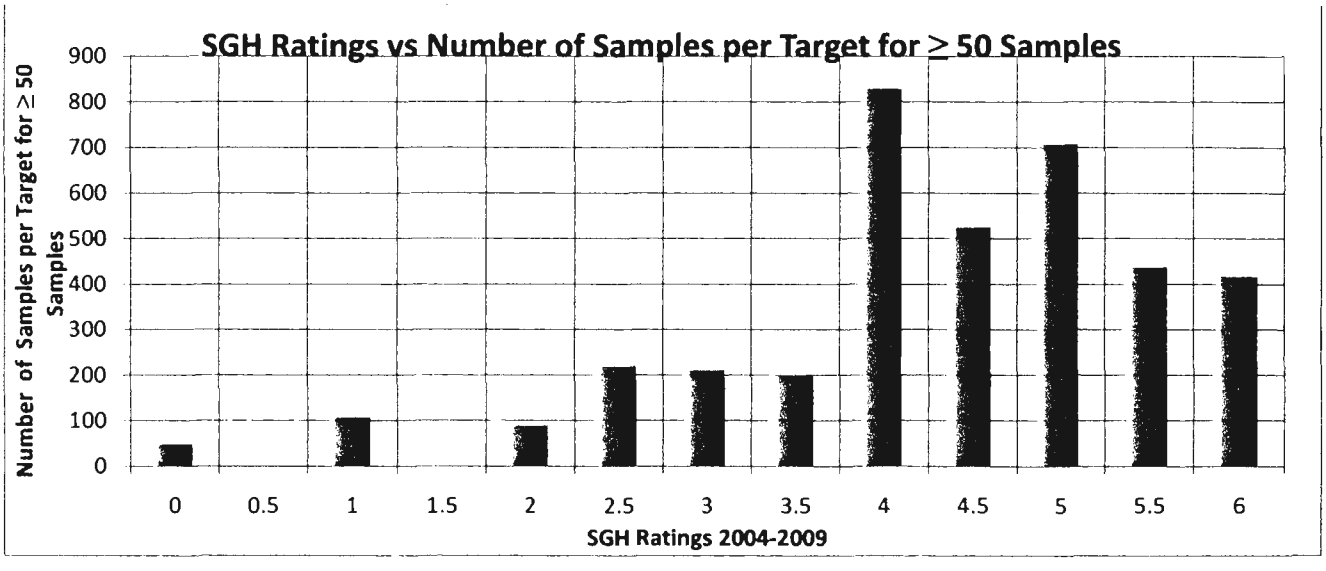
is not said to be linked to grade of a deposit or depth to the target. Even in exploration surveys clients tend to submit samples over more promising targets due to knowledge of the geology and prior geochemical or geophysical results. As shown in the following chart, projects with SGH data from 200 or more sample locations have a higher level of confidence in the interpretation as the geochromatography of the SGH Pathfinder Classes of compounds can be more completely observed and reviewed.



The rating frequency may be biased low as research projects often include a bare minimum of samples to reduce costs. Research projects may also be over targets known to be difficult to depict with geochemistry. Multiple targets in close vicinity in a survey may result in a low bias as the Pathfinder Class geochromatography is more difficult to deconvelute. Ratings may also be biased low if less than the recommended 50 sample locations is submitted as indicated by the following chart. This chart also illustrates that there is no interpretation bias to a particular rating value.

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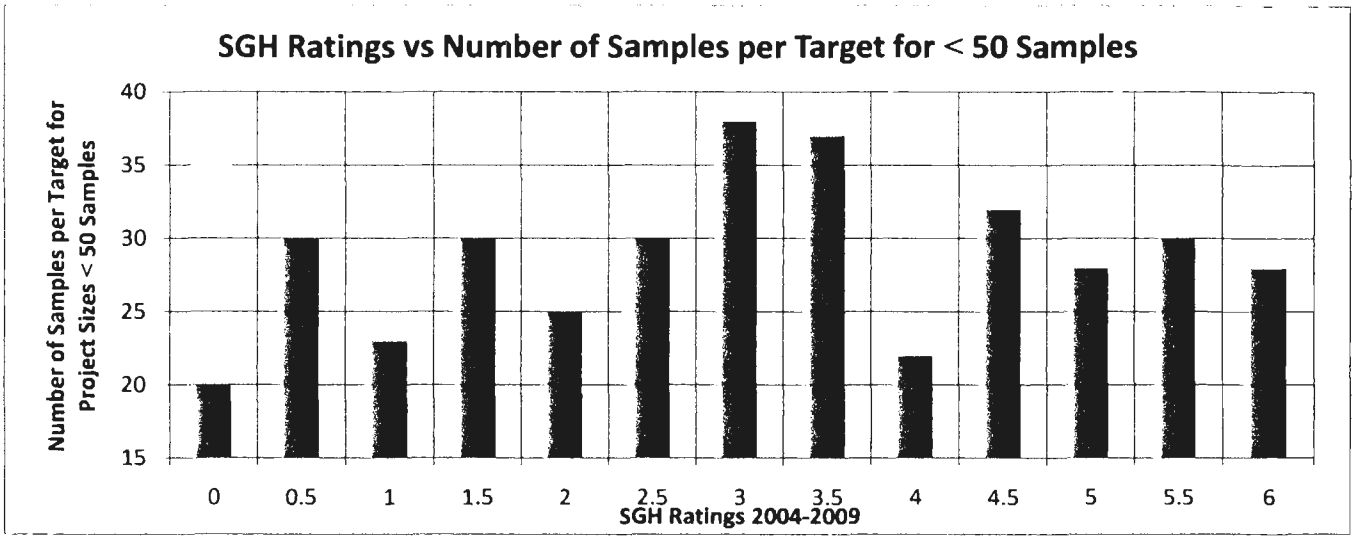
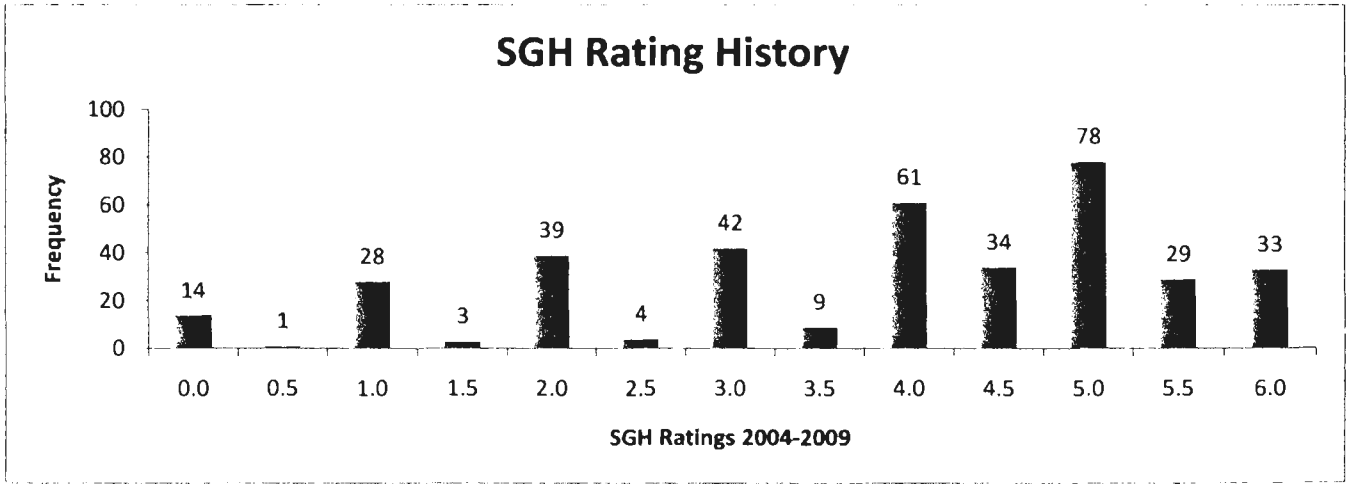


The overall rating frequency for over 400 targets from January 2004 to December 2009 is shown in the chart below illustrating that surveys over more promising targets are most often submitted for best use of research or exploration dollars. It also indicates that the 0.5 increments were less frequent as they started in 2007.



More specific for SGH interpretation for Gold targets, the overall rating frequency for 97 targets from January 2004 to December 2009 is shown in the chart below that also illustrates that surveys over more promising Gold targets are most often submitted for best use of research or exploration dollars.

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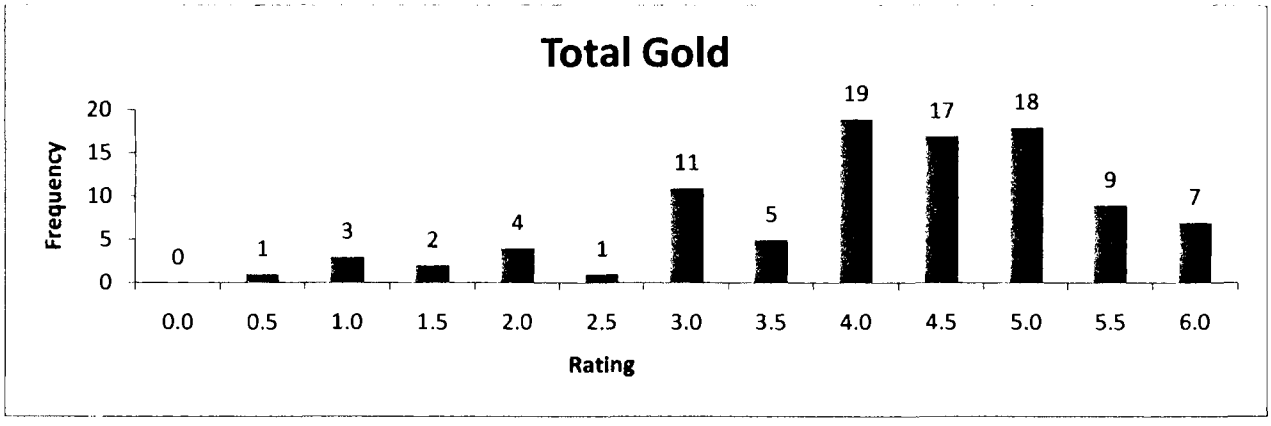

DISCLAIMER

This "SGH Interpretation Report" has been prepared to assist the user in understanding the development and capabilities of this Organic based Geochemistry. The interpretation of the Soil Gas Hydrocarbon (SGH) data is in reference to a template or group of SGH classes of compounds specific to a type of mineralization or target that is chosen by the client (i.e. the template for gold, copper, VMS, uranium, etc.). Although the template of SGH Pathfinder Classes that has been developed through research and review of case studies has proven to be able to address many lithologies, Activation Laboratories Ltd. cannot guarantee that the template is applicable to every type of target in every type of environment. The interpretation in this report attempts to identify an anomaly that has the best SGH signature in the survey for the type of mineralization or target chosen by the client. However, this interpretation is not exhaustive and there may be additional SGH anomalies that may warrant interest. It should not be viewed due to the generation of this SGH report, that Activation Laboratories Ltd. has the expertise or is in the business of interpreting geochemical data as a general service. As the author is the originator of the SGH geochemistry, has researched and developed this exploration tool since 1996, and has produced similar interpretations using SGH data for over 500 surveys, he is perhaps the best qualified to prepare this interpretation as assistance to clients wishing to use SGH. Activation Laboratories Ltd. can offer assistance in general suggestions for sampling protocols and in sample grid location design; however we accept no responsibility to the appropriateness of the samples taken. Activation Laboratories Ltd. has made every attempt to ensure the accuracy and reliability of the information provided in this report. Activation Laboratories Ltd. or its employees, does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information or description of processes contained in this report. The information is provided "as is" without a guarantee of any kind in the interpretation or use of the results of the SGH geochemistry. The client or user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly form using any information or material contained in this report or using data from the associated spreadsheet of results.

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INTERPRETATION OF SGH RESULTS
A11-7345 – TRUE NORTH MINERAL LABORATORIES
CLEAVER SURVEY

SGH SOIL SAMPLE SURVEY INTERPRETATION

This report is based on the SGH results from the analysis of a total of 84 soil samples. The Cleaver survey is comprised of a regular grid with samples spaced at approximately 100 metres apart. Sample coordinates were provided for mapping of the SGH results for these soil samples as Easting and Northing coordinates based on a NAD 83 Zone 17 reference.

SGH SURVEY – SOIL SAMPLE LOCATION MAP

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TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION

Note that the associated SGH results are presented in a separate Excel spreadsheet. This raw data is semi-quantitative and is presented in units of pg/g or *parts-per-trillion* (ppt) as the concentration of specific hydrocarbons in the sample. The number of samples submitted for this project is adequate to use SGH as an exploration tool. As SGH is an organic geochemistry it is essentially "blind" to the presence of any inorganic or actual base metal/ elemental content in the each sample analyzed. SGH has been proven to discriminate between false soil anomalies or mobilized VMS and actually locate the source VMS deposition. SGH is a deep-penetrating geochemistry and has been proven to locate VMS and other types of mineralization at several hundred metres below the surface irrespective of the type of overburden. Note that the SGH data is only reviewed for the particular target deposit type requested, in this case for the presence of VMS based deposits. It is also assumed that there is only one potential target. If known, in surveys with several complex geophysical targets, to obtain the best interpretation the client should indicate that there are possibly multiple targets. The possibility of multiple targets should be known due to potential overlap and the increased complexity of resulting geochromatographic anomalies, which could alter the interpretation as to which targets are mineralized and which ones are not. To address this at the Cleaver Survey, a plan view map was provided (as on page 26) that illustrated the sampling grid and the occurrence of previously detected EM (Electromagnetic) conductors focused as the small solid yellow circular outlines.

The overall precision of the SGH analysis for the soil samples in this Cleaver Survey was excellent as demonstrated by 6 samples taken from this survey which were used for laboratory replicate analysis. The average Coefficient of Variation (%CV) of the replicate results for the project samples in this submission was 5.4 % which represents an excellent level of analytical performance especially at such low parts-per-trillion concentrations.

No leveling or statistics were conducted on the data in this report for mapping or interpretation purposes aside from the use of a Kriging trending algorithm in the GeoSoft Oasis Montaj mapping software. **This interpretation is based only on this survey and on these SGH results.**

The SGH maps shown in plan and in 3D views in this report are SGH "Pathfinder Class maps" for targeting various hydrocarbon flux signatures related to VMS mineralization. These maps represent the simple summation of several individual hydrocarbon compound concentrations that are grouped from within the same organic chemical class. SGH Pathfinder Class maps have been shown to be robust as they are each described using from 4 to 14 (unless otherwise stated) chemically related SGH compounds which are simply summed to create each class map. Thus each map has a higher level of confidence as it is not illustrating just one compound measurement. A legend of the compound classes appears at the bottom of the SGH data spreadsheet.

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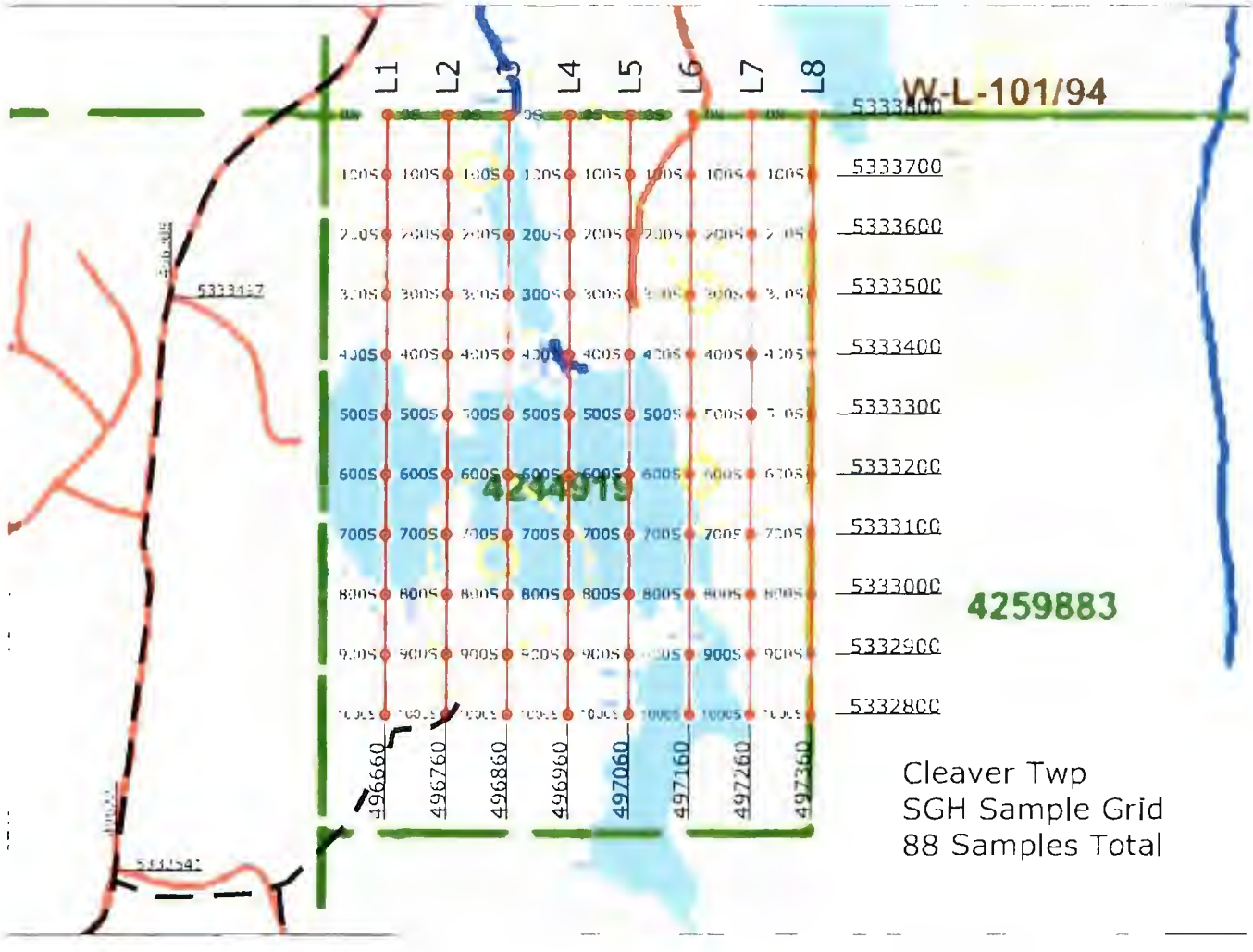
The *overall* SGH interpretation Rating has even a higher level of confidence as it further relies on the consensus between at least two additional pathfinder classes. A combination of these SGH Pathfinder Classes potentially defines the signature of a target at depth if present.

TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION
SAMPLE GRID MAP WITH GEOGRAPHY AND EM CONDUCTORS



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TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION
SGH "VMS" PATHFINDER CLASS MAPS

The VMS template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. At least three Pathfinder Class maps, associated with the SGH signature developed for VMS must be present to begin to be considered for assignment of a good rating relative to the SGH performance in case studies over known VMS based mineralization. The Pathfinder Class anomalies must also concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class.

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "REDOX cell locator". Many SGH surveys for VMS and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo" type anomalies are all typically observed within the SGH data set from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

Note that any concentration value in the accompanying Excel spreadsheet greater than the "Reporting Limit" of 1 ppt is important data and has been able to depict mineralization at depth. The majority of the variability or noise has already been eliminated; additional filtering will adversely affect any interpretation. Note that a Kriging trending algorithm has been applied to the mapping routine in the Geosoft Oasis Montaj software in the development of the SGH Class maps. SGH concentrations are in some way probably related to the amount of mineralization present and the grade of mineralization, which probably defines the characteristics of the biofilm(s) in contact with the deposit, as well as being related to the depth to mineralization. SGH results have also been shown to correlate well with geophysical anomalies such as magnetic anomalies and those of CSAMT.

SGH is a "deep penetrating" geochemistry but also works well for relatively shallow targets. Targets shallower than about 3 to 5 metres will have a reduced SGH signal due to interaction with atmospheric conditions and samples taken right at surface outcrops will have even weaker signals due to a higher degree of weathering from various processes on these volatile and semi-volatile organic hydrocarbons.

The SGH Pathfinder Class map shown on pages 29 and 30, has consistently been associated with the delineation of VMS based mineralization and is just one of the Pathfinder Class maps used in the interpretation (Other SGH Pathfinder Class maps are not shown at this price point and report turnaround time). Additional interpretation information, which may contain additional SGH Pathfinder Class maps, is available as a Supplementary Report at an additional price.

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TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY SOIL SAMPLE SGH SURVEY INTERPRETATION FOR VMS

The plan view map for one of the most reliable SGH VMS Pathfinder Classes is shown on page 29. From the review of this map and other SGH VMS Pathfinder Class maps it is evident that the interpretation of the SGH data for the Cleaver property is complex. This SGH VMS Pathfinder class is expected to show halo or "rabbit-ear" anomalies that delineate Redox conditions in the overburden and can approximate the VMS mineralization that may be present at depth.

The interpretation in this report for VMS mineralization has used the results from some of the research with SGH in recent years which has focused on the potential that the SGH data might be able further dissect and understand the relationships between the chemical Redox conditions in the overburden and the development of an electrochemical cell. This research has resulted in the development by Activation Laboratories of a new enhanced model of the most recent electrochemical/ Redox cell theory originated by Govett (1976) that has graduated to the current model by Hamilton (2004, 2009). The new enhanced model developed by Sutherland (2011) takes the general anomalies expected by the Hamilton model to a higher resolution. This has resulted is a more confident level of interpretation of SGH and the introduction of a more appropriate terminology for SGH as "Spatiotemporal Geochemical Hydrocarbons" rather than Soil Gas Hydrocarbons. The analysis and the SGH acronym has remained the same. With this enhanced interpretation we mark the beginning of the ability to make more confident statements regarding the possible depth to mineralization as we dissect the Redox cell relative to electrochemical theory with 3D-SGH. This model has been formally introduced at the International Applied Geochemistry Symposium organized by The Association of Applied Geochemists to take place in Rovaniemi, Finland, in August 2011.

In interpretation of the SGH VMS signature at the Cleaver Survey a north-south halo anomaly is readily apparent as shown within the black dashed outline on page 29. From the geographical map provided this appears to follow the lakeshore outline very well, thus some might say that the SGH data is just showing the difference in sample type, water saturation, etc. However, Zone-B is over the western portion of the lake yet SGH illustrates an apical anomaly instead of a low. To further confirm that the SGH data is not just seeing a "lake-trend", a second SGH Pathfinder Class that is used to support the interpretation for VMS has been added to this report. This lower molecular weight class is expected to show a tighter anomaly for VMS. As expected the SGH Pathfinder Class for VMS on pages 31 and 32 illustrate a tight "nested rabbit-ear" anomaly. The dotted yellow nested portion is offset from the centre of the halo anomaly on page 29. This can be expected as it is a lighter molecular weight class that can shift to some degree. The existence of these two types of anomalies agrees exceptionally well with the latest 3D-SGH geochemical models recently developed (Sutherland, 2011). These two SGH Pathfinder Class results relative to VMS mineralization, as well as other SGH Class maps not shown in this report provides an excellent confirmation that Redox conditions appear to exist over mineralization that SGH predicts to be VMS based at the Cleaver property survey. These SGH results should be reviewed in tandem with other site information available to True North Mineral Laboratories.

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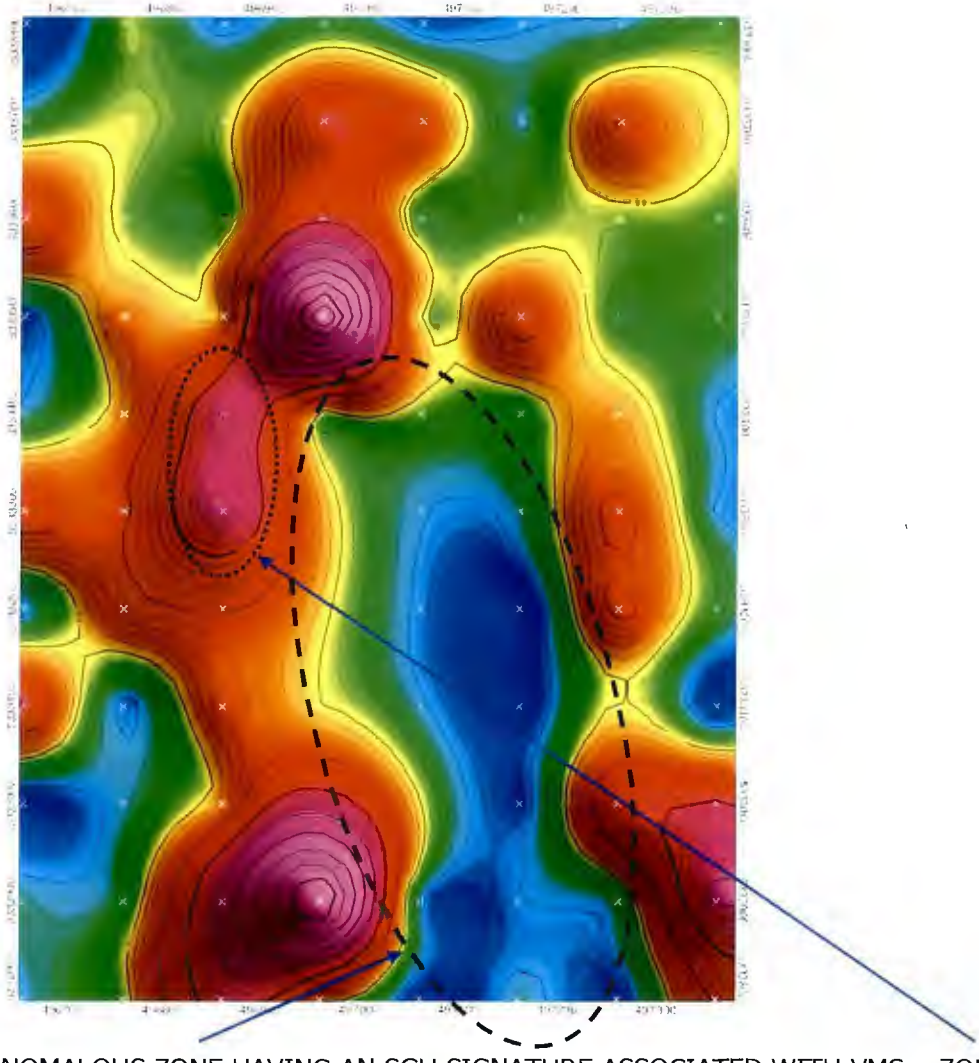
SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



HALO ANOMALOUS ZONE HAVING AN SGH SIGNATURE ASSOCIATED WITH VMS ZONE-B

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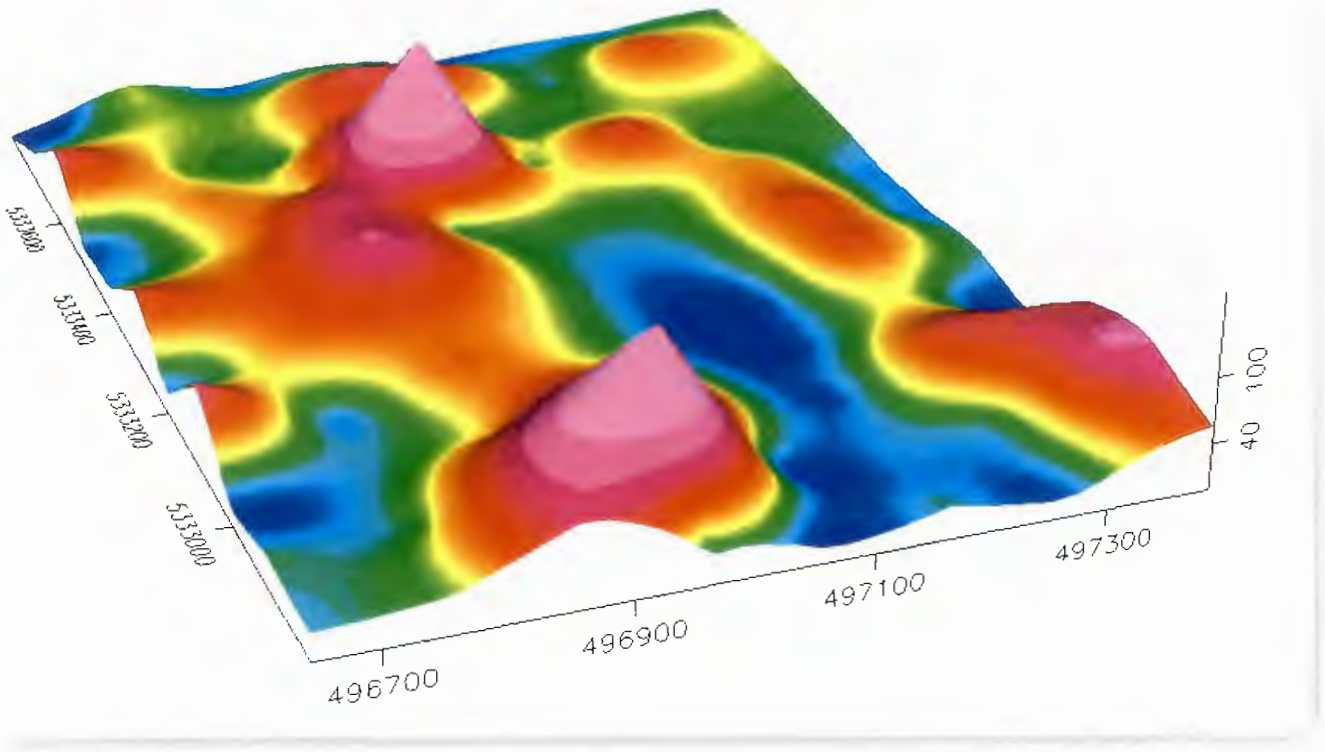
SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



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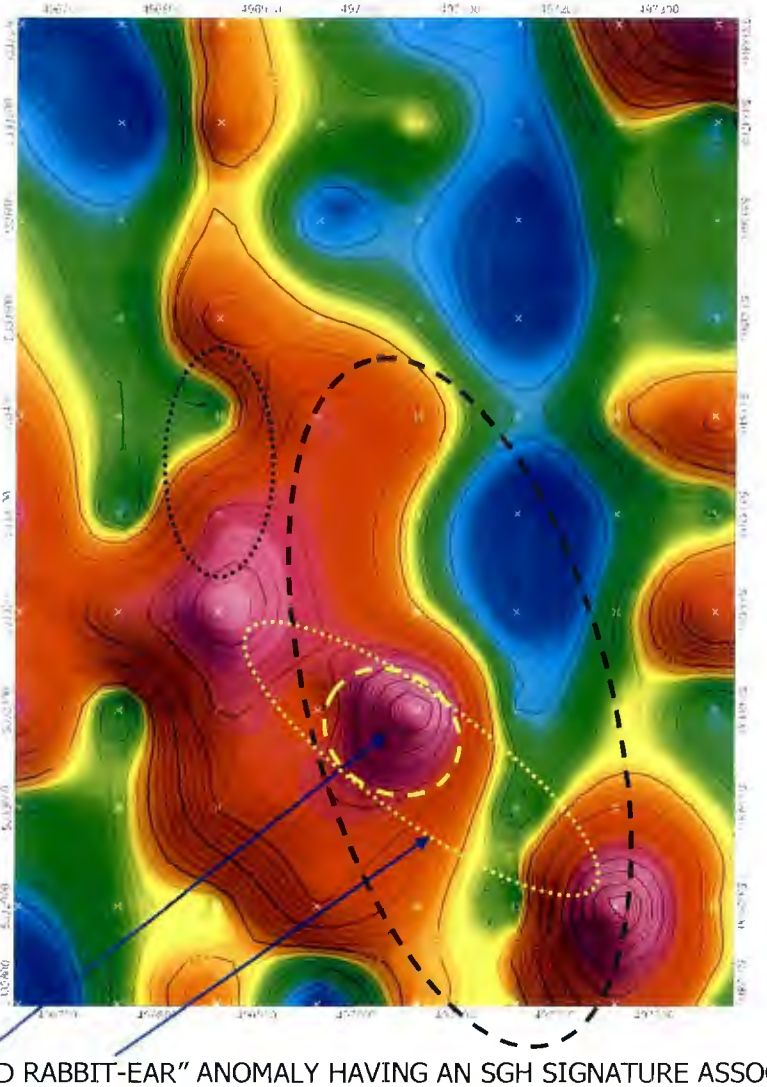
SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



"NESTED RABBIT-EAR" ANOMALY HAVING AN SGH SIGNATURE ASSOCIATED WITH VMS

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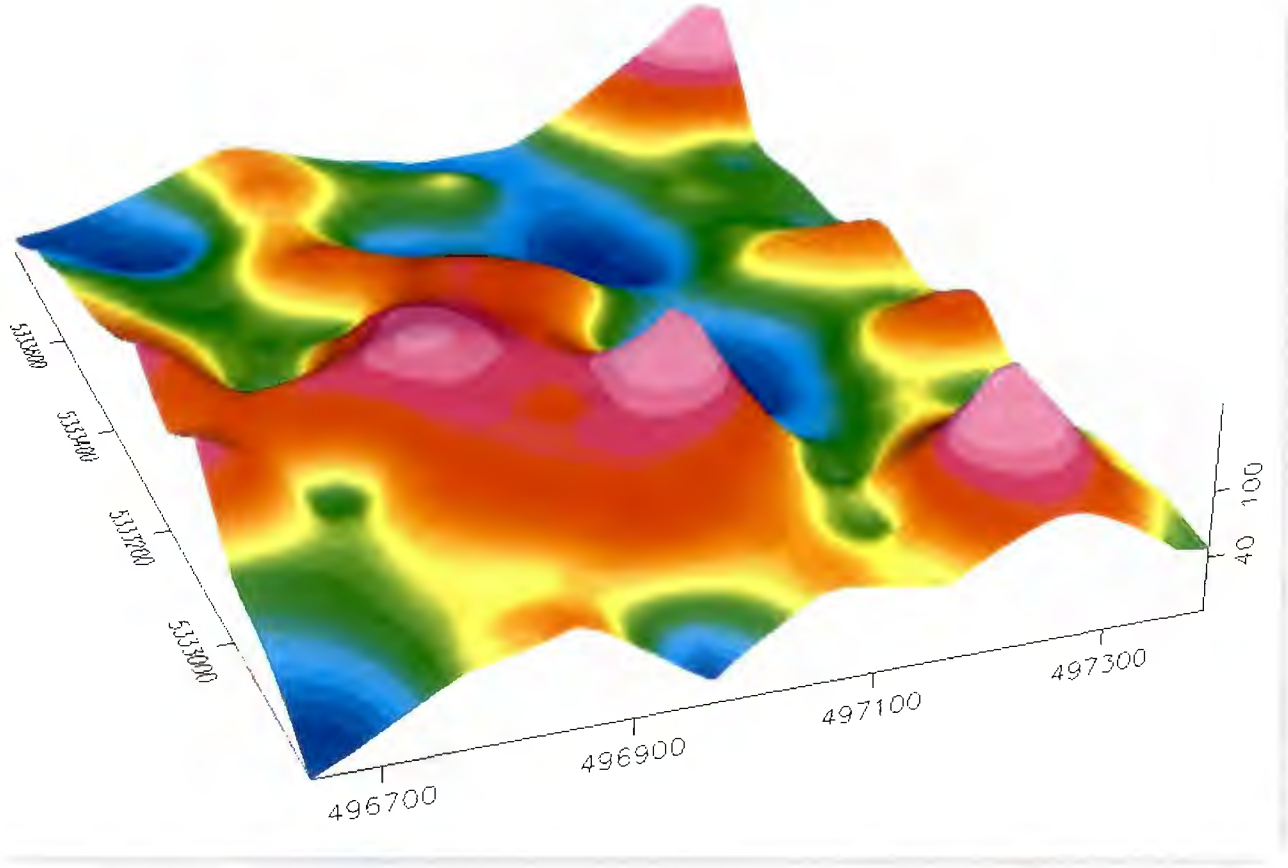
SGH "VMS" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



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SGH RATING FOR THE SGH "VMS" TEMPLATE - TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY

It should also be noted that the strongest EM signals appear to surround the tight halo anomalous zone within the black dashed oval on page 29 (also shown on page 31 for ease of comparison). This does not appear to be coincidence.

After review of all of the SGH Pathfinder Class maps related to VMS based mineralization, the SGH results from these soil samples suggest a **"rating of 5.5"** for the area with the black dashed oval as the halo anomalous zone at the Cleaver property survey.

The client should use a combination of these SGH results and its report with additional geochemical, geophysical, and geological information to possibly obtain a more confident and precise target location.

This rating is based on a scale of 6.0, in 0.5 increments, with a value of 6.0 being the best. This rating represents the similarity of these SGH results with case studies over a Volcanic Massive Sulphide (VMS) type target, to the SGH case studies conducted at the Hanson Lake VMS deposit in Saskatchewan, the South Gilmour VMS deposit in New Brunswick and the Cross Lake VMS deposit in Ontario. The general SGH template used for VMS has been developed primarily from these study areas. It has since been enhanced and has been proven effective from the interpretation over many other surveys in many different geographical regions and for a wide variety of lithologies for VMS based deposits. The degree of confidence in the rating only starts to be "good" at a level of 4.0.

Potential Drill targets would usually be expected to be in the centre of these halo anomalies in Redox Zones A and B as directly over the greatest mass of mineralization at depth. The identification of a drill target is not an explicit recommendation by Activation Laboratories Ltd. to drill test the associated SGH anomaly. A drill target is implied to ensure that the reader is aware of the location having the highest confidence of being the location of the vertical projection of the mineralization, based only on SGH data. Other geological, geochemical and/or geophysical information should always be considered. This is also not a recommendation for vertical drilling. Vertical drilling may not be the best approach to test the SGH anomaly in this area. Activation Laboratories Ltd. has no experience in actual exploration drilling technique.

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SGH SURVEY – RECOMMENDATIONS
TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY
SOIL SAMPLE SGH SURVEY

Additional samples to the south of the halo anomalous zone may help better define the extent of the Redox conditions at the Cleaver survey. These infill samples could potentially further support or improve the interpretation relative to the SGH signature for VMS mineralization. Please refer to the general recommendations for additional or in-fill sampling for SGH in the section below.

GENERAL RECOMMENDATIONS FOR ADDITIONAL OR IN-FILL SAMPLING FOR SGH ANALYSIS

Based on the results of this report and/or other information, the client may decide that in-fill sampling may be warranted. To obtain the best results from additional sampling for SGH it is recommended that sample locations within, or bordering, the area of interest be re-sampled rather than just combining new sample results with the sample data from the initial survey. Although several SGH surveys have previously been easily and directly, combined without data leveling, it cannot be guaranteed that data leveling will not be required. It has been found that data leveling is more apt to be required should the new samples be collected under significantly different environmental conditions than during the initial sample survey, i.e. summer collection versus winter collection. The process of data leveling adds a minimum of 3 to 5 days of work to conduct the additional data evaluation, develop additional plots of the results, conduct new interpretations, and in additional report descriptions. Results from data leveling is also always considered "an approximation", thus the confidence in a combined interpretation will be lower that the interpretation from samples collected during one excursion to the field and submitted as one survey. As of September 2010, an additional cost will be invoiced should data leveling operations be required if the client requests that two SGH data sets be interpreted and reported together. Thus re-sampling a few of the original sample locations will provide a faster turnaround time for results and provide more accurate and confident surveys for evaluation and aid in deciding specific drill targets.

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Cautionary Note Regarding Assumptions and Forward Looking Statements

The statements and target rating made in the Soil Gas Hydrocarbon (SGH) interpretive report or in other communications may contain certain forward-looking information related to a target or SGH anomaly.

Statements related to the rating of a target are based on comparison of the SGH signatures derived by Activation Laboratories Ltd. through previous research on known case studies. The rating is not derived from any statistics or other formula. The rating is a subjective value on a scale of 0 to 6 relative to the similarity of the SGH signature reviewed compared to the results of previous scientific research and case studies based on the analysis of surficial samples over known ore bodies. No information on other geochemistries, geophysics, or geology is usually available as additional information for the interpretation and assignment of a rating value unless otherwise stated. The rating does not imply ore grade and is not to be used in mineral resource estimate calculations. References to the rating should be viewed as forward-looking statements to the extent that it involves a subjective comparison to known SGH case studies. As with other geochemistries, the implied rating and anticipated target characteristics may be different than that actually encountered if the target is drilled or the property developed.

Activation Laboratories Ltd. may also make a scientifically based reference in this interpretive report to an area that might be used as a drill target. Usually the nearest sample is identified as an approximation to a "possible drill target" location. This is based only on SGH results and is to be regarded as a guide based on the current state of this science.

Unless stated, Activation Laboratories Ltd. has not physically observed the exploration site and has no prior knowledge of any site description or details. Actlabs makes general recommendations for sampling and shipping of samples. Unless stated, the laboratory does not witness sampling, does not take into consideration the specific sampling procedures used, season, handling, packaging, or shipping methods. The majority of the time, Activation Laboratories Ltd. has had no input into sampling survey design. Where specified Activation Laboratories Ltd. may not have conducted sample preparation procedures as it may have been conducted at the client's assigned laboratory. Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ scientifically which may impact the associated interpretation and target rating from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended.

In general, any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions, future events or performance are not statements of historical fact. These "scientifically based educated theories" should be viewed as "forward-looking statements".

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Readers of this interpretive report are cautioned not to place undue reliance on forward-looking information. Forward looking statements are made based on scientific beliefs, estimates and opinions on the date the statements are made and the interpretive report issued. The Company undertakes no obligation to update forward-looking statements or otherwise revise previous reports if these beliefs, estimates and opinions, future scientific developments, other new information, or other circumstances should change that may affect the analytical results, rating, or interpretation.

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Date Submitted at Actlabs Ancaster: July 25, 2011

Date Analyzed: August 22 – August 24, 2011

Interpretation Report: September 16, 2011

TRUE NORTH MINERAL LABORATORIES

190 Quartz Avenue

Timmins, Ontario, Canada

P4N 4L7

Attention: Mr. Kevin Cool

RE: Your Reference: Cleaver Survey – Interpreted for VMS Targets

Activation Laboratories Workorder: A11-7345

CERTIFICATE OF ANALYSIS

84 Soil samples were submitted for analysis.

Sample preparation was completed at Actlabs Ancaster ON Canada facility:
Code S4 – Drying at 40°C, Sieving -60 mesh

The following analytical package was requested:
Code SGH – Soil Gas Hydrocarbon Geochemistry

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REPORT/WORKORDER: A11-7345

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at the time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of the material submitted for analysis.

Notes: The SGH – Soil Gas Hydrocarbon Geochemistry is a semi-quantitative analytical procedure to detect and measure 162 hydrocarbon compounds as the organic signature in the sample material collected from a survey area. It is not an assay of mineralization but is a predictive geochemical tool used for exploration. This certificate pertains only to the SGH data presented in the associated Microsoft Excel spreadsheet of results.

The author of this SGH Interpretation Report, Mr. Dale Sutherland, is the creator of the SGH organic geochemistry. He is a Chartered Chemist (C.Chem.) and Forensic Scientist specializing in organic chemistry, and a member of The Association of Applied Geochemists. He is not a professional geologist or a professional geochemist.

CERTIFIED BY:

D Sutherland

Dale Sutherland, B.Sc.,B.Sc.,B.Ed.,C.Chem.

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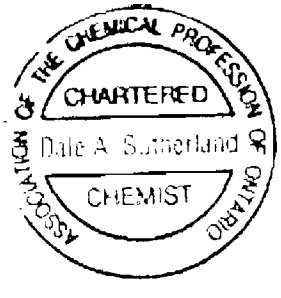

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SGH – SOIL GAS HYDROCARBON
Predictive Geochemistry

for

TRUE NORTH MINERAL LABORATORIES

"CLEAVER SURVEY"

November 2, 2011

* *Dale Sutherland,*

Activation Laboratories Ltd

(- author, originator)*

EVALUATION OF SOIL SAMPLES

DATA EXPLORATION FOR: "GOLD" TARGETS

SGH GOLD TEMPLATE USED FOR THIS REPORT

Workorder: A11-7345

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PREFACE

THIS "STANDARD" SGH INTERPRETATION REPORT:

The purpose of this Soil Gas Hydrocarbon (SGH) interpretation "Standard Report" is to ensure that clients and other potential reviewers of the results have a good understanding of this organic, deep penetrating geochemistry. As SGH provides such a large data set and is not interpreted in the same way as inorganic geochemistries, this report enables the user to realize the results in a timely fashion and capitalizes on years of research and development since the inception of SGH in 1976 combined with the knowledge obtained by Activation Laboratories through the interpretation of SGH data from over hundreds of surveys for a wide variety of target types in various lithologies from many geographical locations. The report is compulsory as it is the only known organic geochemistry that, in spite of the name, uses non-gaseous semi-volatile organic compounds interpreted using a forensic signature approach It is based solely on SGH data and does not include the consideration or interpretation from any other geochemistry (inorganic), geology, or geophysics that may exist related to this survey area(s). This report can also provide evidence of project maintenance. To keep the price to a minimum and to provide as short a turnaround time as practically possible, usually only one SGH Pathfinder Class map is illustrated in a "Standard Report" with an applied interpretation although several other SGH Pathfinder Class maps are used and referenced.

"SUPPLEMENTAL REPORT": ($ 1,500.00, as of July 1, 2011)

Those clients who have determined that these SGH results will add an important aspect to their exploration effort can request a "Supplemental Report". This report contains the additional SGH Pathfinder Classes and an explanation of their use in the SGH interpretation that supports the initial applied "Rating" for the survey as a relative comparison to the results previously obtained in case studies that were used to create the SGH template for the general target type.

"ADDITIONAL INTERPRETATION": ($ 1,500.00, as of July 1, 2011)

The SGH data can be interpreted multiple times in comparison to a variety of SGH templates developed for exploration for different mineral targets or petroleum plays. The samples do not have to be reanalyzed. This can be addressed as a separate section of a report or as a separate report based on the client's wishes. The price is per survey area, e.g. if there are two projects in a submission, perhaps a North area and South area, and both survey areas are to be interpreted for say Gold and Copper, the first interpretation is included in the SGH analysis price, the second interpretation for each area would be priced at $1,500 per area, thus a total of $3,000.

"BASIC OR SUPPLEMENTAL REPORT GIS PACKAGE": ($ 120.00)

Those clients that wish to import the SGH results into their GIS software can request a "GIS Package", which will include the geo-referenced image files that reflect the mapped SGH Pathfinder Class or Classes contained in the Standard or Supplemental Report and an Excel CSV file(s) containing the associated Class Sum data.

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SOIL GAS HYDROCARBON (SGH) GEOCHEMISTRY – OVERVIEW

In the search for minerals and elements, geology requires tools to assess the location and potential quantity of minerals and ores. In the past people looked at the landscape to find the deposit. Similar landscapes indicate similar mineral and metal deposits. This is searching on a macro level, while geochemistry is searching on a micro level. Organic material requires many minerals and elements, so organic materials can be biomarker of the present of the minerals and elements.

SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. The analysis involves the testing for 162 hydrocarbon compounds in the C5-C17 carbon series range applicable to a wide variety of sample types. SGH has been successful for delineating targets found at over 500 metres in depth. Samples of various media have been successfully analyzed such as soil (any horizon), drill core, rock, peat, lake-bottom sediments and even snow. The SGH analysis incorporates a very weak leach, essentially aqueous, that only extracts the surficial bound hydrocarbon compounds and those compounds in interstitial spaces around the sample particles. These are the hydrocarbons that have been mobilized from the target depth. SGH is unique and should not be confused with other hydrocarbon tests or traditional analyses that measure C1 (Methane) to C5 (Pentane) or other gases. SGH is also different from soil hydrocarbon tests that thermally extracts or desorbs all of the hydrocarbons from the whole soil sample. This test is less specific as it does not separate the hydrocarbons and thus does not identify or measure the responses as precisely. These tests also do not use a forensic approach to identification. The hydrocarbons in the SGH extract are separated by high resolution capillary column gas chromatography to isolate, confirm, and measure the presence of only the individual hydrocarbons that have been found to be of interest from initial research and development and from performance testing in two Canadian Mining Industry Research Organization (CAMIRO) projects (97E04 and 01E02).

Over the past 14 years of research, Activation Laboratories Ltd. has developed an in-depth understanding of the unique SGH signatures associated with different commodity targets. Using a forensic approach we have developed target signatures or templates for identification, and the understanding of the expected geochromatography that is exhibited by each class of SGH compounds. In 2004 we began to include an SGH interpretation report delivered with the data to enable our clients to realize the complete value and understanding of the SGH results in the shortest time frame and provide the benefit from past research sponsored by Actlabs, CAMIRO, OMET and other projects.

SGH has attracted the attention of a large number of Exploration companies. In the above mentioned research projects the sponsors have included (in no order): Western Mining Corporation, BHP-Billiton, Inco, Noranda, Outokumpu, Xstrata, Cameco, Cominco, Rio Algom, Alberta Geological Survey, Ontario Geological Survey, Manitoba Geological Survey and OMET. Further, beyond this research, Activation Laboratories Ltd. has interpreted the SGH data for over 400 targets from clients since January of 2004. In both CAMIRO research projects over known mineralization and in exploration projects over unknown targets, SGH has performed exceptionally well. As an example, in

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the first CAMIRO research project that commenced in 1997 (Project 97E04), there were 10 study areas that were submitted blindly to Actlabs. These study sites were selected since other inorganic geochemistries were unsuccessful at illustrating anomalies related to the target.

Although Actlabs was only provided with the samples and their coordinates, SGH was able to locate the blind mineralization with exceptional accuracy in 9 of the 10 surveys. SGH has recently been very successful in exploration and discovery of unknown targets e.g. Golden Band Resources drilled an SGH anomaly and discovered a significant vein containing "visible" gold. (www.goldenbandresources.com)

Sample Type and Survey Design It is highly recommended that a ***minimum*** of 50 sample "locations" is preferred to obtain enough samples into background areas on both sides of *small* suspected targets (wet gas plays, Kimberlite pipes, Uranium Breccia pipes, veins, etc.). SGH is not interpreted in the same way as inorganic based geochemistries. SGH must have enough samples over both the target and background areas in order to fully study the dispersion patterns or geochromatography of the SGH classes of compounds. Based on our minimum recommendation of at least 50 sample locations we further suggest that all samples be *evenly spaced* with about one-third of the samples over the target and one-third on each side of the target in order for SGH to be used for exploration. Targets other than gas plays, pipes, dykes or veins usually require additional samples to represent both the target and background areas.

SGH has been shown to be very robust to the use of different sample types even "within" the same survey or transect. Research has illustrated that it is far more important to the ultimate interpretation of the results to take a complete sample transect or grid than to skip samples due to different sample media. The most ideal natural sample is still believed to be soil from the "Upper B-Horizon", however excellent results can also be obtained from other soil horizons, humus, peat, lake-bottom sediments, and even snow. The sampling design is suggested to use evenly spaced samples from 15 metres to 200 metres and line spacing from 50 metres to 500 metres depending on the size and type of target. A 4:1 ratio is suggested, however, larger orientation surveys have also been successful. Ideally even large grids should have one-third of the samples over the target and two-thirds of the samples into anticipated background areas. This will allow the proper assessment of the SGH geochromatographic vectoring and background site signature levels with minimal bias. Individual samples taken at significant distances from the main survey area to represent background are not of value in the SGH interpretation as SGH results are not background subtracted. Samples can be drip dried in the field and do not need special preservation for shipping and has been specifically designed to avoid common contaminants from sample handling and shipping. SGH has also been shown to be robust to cultural activities even to the point that successful results and interpretation has been obtained from roadside right-of-ways.

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In conclusion, the conditions for the sample type and survey design include:

- Minimum of 50 samples "locations"
- Evenly spaced in the target area – one-third over the target and one-third on each side of the target
- Different sample types even "within" the same survey or transect
- Evenly spaced samples – lines spaced in a 4:1 ratio
- Samples can be drip dried.
- No special preservation for shipping is needed.

Sample Preparation and Analysis

Upon receipt at Activation Laboratories the samples are air-dried in isolated and dedicated environmentally controlled rooms set to 40°C. The dried samples are then sieved. In the sieving process, it is important that compressed air is not used to clean the sieves between samples as trace amounts of compressor oils "may" poison the samples and significantly affect some target signatures. At Activation Laboratories a vacuum is used to clean the sieve between each sample. The -60 mesh sieve fraction (<250 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected and packaged in a Kraft paper envelope and transported from our sample preparation building to our analytical building on the same street in Ancaster Ontario. Each sample is then extracted, separated by gas chromatography and analyzed by mass spectrometry using customized parameters enabling the highly specific detection of the 162 targeted hydrocarbons at a *reporting limit* of one part-per-trillion (ppt). This trace level limit of reporting is critical to the detection of these hydrocarbons that, through research, have been found to be related at least in part to the breakdown and release of hydrocarbons from the death phase of microbes directly interacting with a deposit at depth. The hydrocarbon signatures are directly linked to the deposit type, which is used as a food source. The hydrocarbons that are mobilized and metabolized by the microbes are released in the death phase of each successive generation. Very few of the hydrocarbons measured are actually due to microbe cell structure, or hydrocarbons present or formed in the genesis of the deposit or from anthropogenic contamination. The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

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Mobilized Inorganic Geochemical Anomalies

It is important to note that SGH is essentially "*blind*" to any inorganic content in samples as only *organic* compounds as hydrocarbons are measured. Thus inorganic geochemical surface anomalies that have migrated away from the mineral source, and thus may be interpreted and found to be a false target location, is not detected and does not affect SGH results. This fact is of great advantage when comparing the SGH results to inorganic geochemical results. If there is agreement in the location of the anomalies between the organic and inorganic technique, such as Actlabs' Enzyme Leach, a significant increase in confidence in the target location can be realized. If there is no agreement or a shift in the location of the anomalies between the techniques, the inorganic anomaly may have been mobilized in the surficial environment.

The Nugget Effect

As SGH is "blind" to the inorganic content in the survey samples, any concern of a "nugget effect" will not be encountered with SGH data. A "nugget effect" may be of a concern for inorganic geochemistries from surveys over copper, gold, lead, nickel, etc. type targets.

SGH Interpretation Report

All SGH submissions must be accompanied by relative or UTM coordinates so that we may ensure that the sample survey design is appropriate for use with SGH, and to provide an SGH interpretation with the results. In our interpretation procedure, we separate the results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, thiophenes, aromatic, and polyaromatic compounds. Note that none of the SGH hydrocarbons are "gaseous" at room temperature and pressure. The classes are then evaluated in terms of their geochromatography and for coincident compound class anomalies that are unique to different types of mineralization. Actlabs uses a six point scale in assigning a subjective rating of similarity of the SGH signatures found in the submitted survey to signatures previously reviewed and researched from known case studies over the same commodity type. Also factored into this rating is the appropriateness of the survey and amount of data/sample locations that is available for interpretation. This rating scale is described in detail in the following section.

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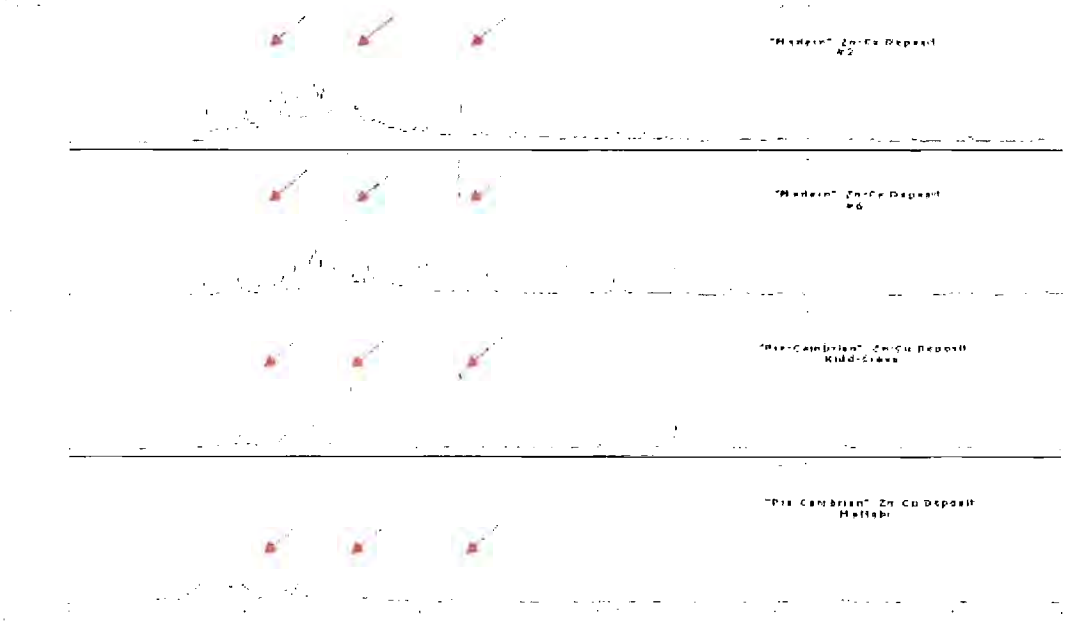
SGH – FORENSIC GEOCHEMICAL SIGNATURES

The following analyses examine the Volcanic Massive Sulphide (VMS) deposit in various known locations. These analyses show how the gas chromatography indicates the reality of deposits. For all the profiles in this section, the red arrows indicate the signature of the VMS, which have all been found by organic geochemistry. These forensic geochemical signatures are shown to consistent for similar target areas; therefore, the analyses are reliable indicators for the presence of VMS.

One of the first experiments in 1996 in the development of the SGH analysis was to observe if an SGH response could be obtained directly from an ore sample. From office shelf specimens, small rock chips were obtained which were then crushed and milled. The fine pulp obtained was then subjected to the SGH analysis. These shelf specimen samples were from well known VMS deposits of the Mattabi deposit from the Archean Sturgeon Lake Camp in Northwestern Ontario and from the Kidd Creek Archean volcanic-hosted copper-zinc deposit. Even these specimen samples contain a geochemical record of the hydrocarbons produced by the bacteria that had been feeding on these deposits at depth. As a comparison, SGH analysis were similarly conducted on modern-day VMS ore samples taken from a "black smoker" hydrothermal volcanic vent from the deep sea bed of the Juan de Fuca Ridge where high concentrations of microbial growth was also known to exist. The raw data profiles as GC/MS Total Ion Chromatograms are shown below to illustrate the *"visible"* portion of the VMS signature obtained from the SGH analysis.



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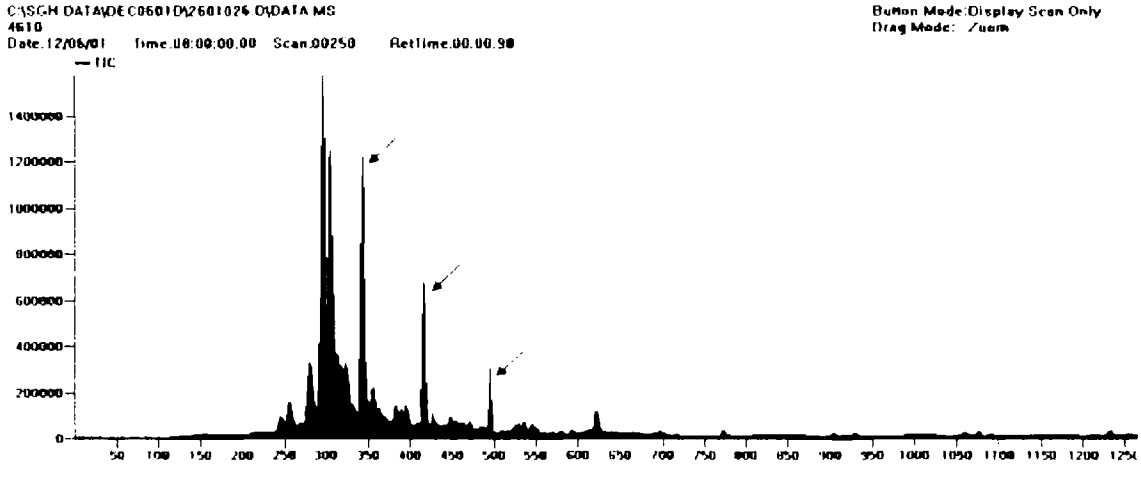
The above profiles are:

- First profile: Samples from modern day "black smokers"
- Second profile: Samples from modern day "black smokers"
- Third profile: Samples from Pre-Cambrian Zn-Cu Kidd Creek deposit
- Fourth profile: Samples from Mattabi deposit

The red arrows point to three compounds that are a *portion* of the SGH signature for VMS type deposits. This visible portion of the VMS signature of hydrocarbons can easily be seen in the analysis of each of these four samples.

The next question in our early objectives was to see if this SGH signature could also be observed in *surficial soil samples* that had been taken over VMS deposits. Through our research projects, soil samples were obtained from over the Ruttan Cu-Zn VMS deposit near Leaf Rapids, Manitoba and located in the Paleoproterozoic Rusty Lake greenstone belt. The profile obtained, as observed in the raw GC/MS chromatogram, is shown in this next image below:



The three compounds indicated by the red arrows represent the same *visible portion* of the VMS signature observed from the modern day black smoker samples and the ore samples taken from the Mattabi and Kidd Creek, even though this soil was taken from over a different VMS deposit in a geographically different area. Is this coincidence?

Another soil sample was obtained from Noranda's Gilmour South base-metal occurrence in the Bathurst Mining camp in northern New Brunswick. As shown below, this sample contained a very

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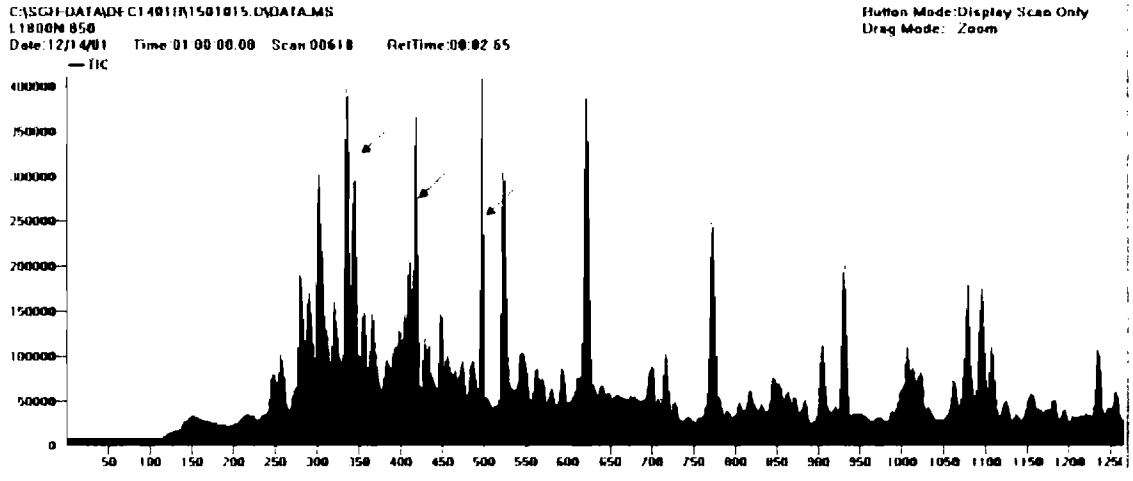
complex SGH signature, however the visible portion of the VMS signature as indicated by the red arrows is still observed as in the black smoker, Mattabi and Kidd Creek ore samples.



In research conducted by the Ontario Geological Survey, this same portion of the SGH signature was also observed over the VMS deposit at Cross Lake in Ontario. **Note that the visible signature shown as the three compounds indicated by the red arrows is only a small portion of the complete SGH VMS signature**. The full VMS signature is made up of at least three groups, as three organic chemical classes, that together contain at least 35 of the individual SGH hydrocarbons.

The chromatograms shown on the preceding page from the GC/MS analysis are not used directly in the interpretation of SGH data. As we are only interested in a specific list of 162 hydrocarbons, the mass spectrometer and associated software programs specifically identifies the hydrocarbons of interest, runs calculations using relative responses to a short list of hydrocarbons used as standards, and develops an Excel spreadsheet of semi-quantitative concentration data to represent the sample. Thus the SGH results for a sample, like that observed in ore from the Ruttan, are filtered to obtain the concentrations for the specific 162 hydrocarbons. A simple bar graph drawn from the Excel spreadsheet of the hydrocarbons and their concentrations results in a DNA like *forensic SGH signature* as shown below. The portion discussed hear as the "visible" SGH VMS signature in the GC/MS chromatograms, is again shown by the red arrows.

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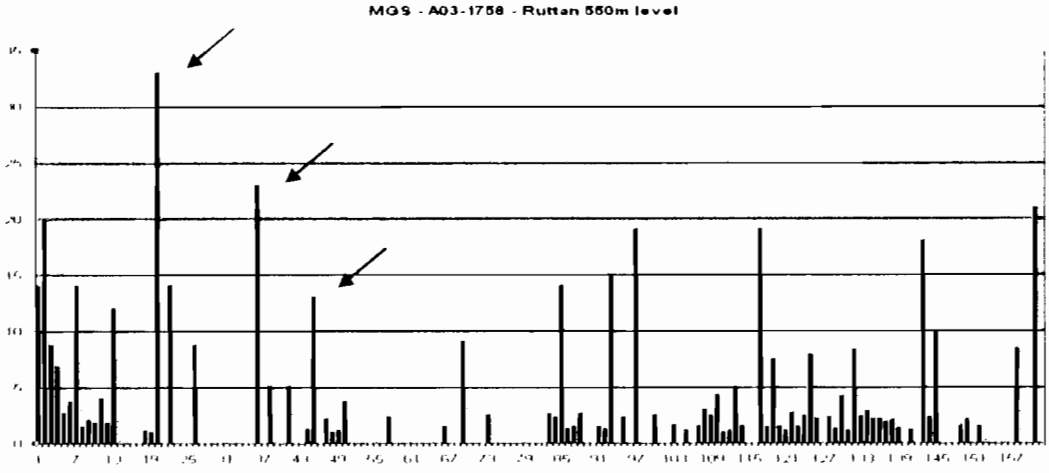

Through the work done in the SGH CAMIRO research projects, it was observed that the hydrocarbon signature produced by the SGH technique appeared to also be able to be used to differentiate barren from ore-bearing conductors. This was explored further through the submission and analysis of specific specimen samples that represented a barren pyritic conductor and a barren graphitic conductor.

The GC/MS chromatograms from these two specimens are compared to that obtained from the Kidd-Creek ore as shown below. This diagram conclusively shows that the SGH signatures obtained from the two types of barren conductors are completely different than that obtained by SGH over VMS type ore. SGH is thus able to differentiate between ore-bearing conductors and barren conductors as **the Forensic SGH Geochemical signature is different**.

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Pre-Cambrian -Zn-Cu Deposit "Kidd-Creek"

Barren Graphitic Conductor

Barren Pyritic Conductor

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "REDOX cell locator". Many SGH surveys for Gold and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo" type SGH anomalies are all typically observed from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

The VMS template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. Again, at least three Pathfinder Class group maps, associated with the SGH signature for VMS, must be present to begin to be considered for assignment of a good rating. The Pathfinder Class anomalies in these maps must logically concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class, for a specific area.

The interpretation development history for VMS SGH Pathfinder Class map(s) shown in this report is similar to the development history for other target types. The reader should not draw a conclusion that SGH is used only for sulphide based mineralization as some of the most intense SGH anomaly has been associated with Kimberlites where sulphides are essentially not present.

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SGH DATA QUALITY

Reporting Limit

The SGH Excel spreadsheet of results contains the raw unaltered concentrations of the individual SGH compounds in units of "part-per-trillion" (ppt). The reporting of these ultra low levels is vital to the measurement of the small amounts of hydrocarbons now known to be leached/metabolized and subsequently released by dead bacteria that have been interacting with the ore at depth. To ensure that the data has a high level of confidence, a "reporting limit" is used. The reporting limit of 1 ppt actually represents a level of confidence of approximately 5 standard deviations where SGH data is assured to be "real" and non-zero. Thus in SGH the use of a reporting limit automatically removes site variability, and there is no need to further background subtract any data as the reporting limit has already filtered out any site background effects. Thus we recommend that all data that is equal to or greater than 2 ppt should be used in any data review. It is important to review all SGH data as low values that may be the centre of halo anomalies and higher values as apical anomalies or as halo ridges are all important.

Laboratory Replicate Analysis

A laboratory replicate is a sample taken randomly from the submitted survey being analyzed and are not unrelated samples taken from some large stockpile of bulk material. In the Organics laboratory an equal portion of this sieved sample, or pulp, is taken and analyzed in the same manner using the Gas Chromatography/Mass Spectrometer. The comparison of laboratory replicate and field duplicate results for chemical tests in the parts-per-million or even parts-per-billion range has typically been done using an absolute "relative percent difference (RPD)" statistic which is an easy proxy for error estimation rather than a more complete analysis of precision as specified by Thompson and Howarth. An RPD statistic is not appropriate for SGH results as the reporting limit for SGH is *1 part-per-trillion*. Further, *SGH is a semi-quantitative technique* and was not designed to have the same level of precision as other less sensitive geochemistry's as it is only used as an exploration tool and not for any assay work. SGH is also designed to cover a wide range of organic compounds with an unprecedented 162 compounds being measured for each sample. In order to analyze such a wide molecular weight range of compounds, sacrifices were made to the variability especially in the low molecular weight range of the SGH analysis. The result is that the first fifteen SGH compounds in the Excel spreadsheet is expected to exhibit more imprecision than the other 147 compounds. An SGH laboratory replicate is a large set of data for comparison even for just a few pairs of analyses. Precision calculations using a Thompson and Howarth approach should only be used for estimating error in individual measurements, and not for describing the average error in a larger data set. In geochemical exploration geochemists seek concentration patterns to interpret and thus rigorous precision in individual samples is not required because the concentrations of many samples are interpreted collectively. For these reasons recent and independent research at Acadia University in Canada promote that a percent Coefficient of Variation (%CV) should be used as a universal measurement of relative error in all geochemical applications. As SGH results are a relatively large data set for nearly all submissions, %CV is a better statistic for use with SGH. By

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using %CV, the concentration of duplicate pairs is irrelevant because the units of concentration cancel out in the formation of the coefficient of variation ratio. For SGH, the %CV is calculated on all values ≥ 2 ppt. These values are averaged and represent a value for each pair of replicate analysis of the sample. All of the %CV values for the replicates are then averaged to report one %CV value to represent the overall estimate of the relative error in the laboratory sub-sampling from the prepared samples, and any instrumental variability, in the SGH data set for the survey. Actlabs' has successfully addressed the analytical challenge to minimize analytical variability for such a large list of compounds. Thus as SGH is also interpreted as a signature and is solely used for exploration and not assay measurement, the data from SGH is *"fit for purpose"* as a geochemical exploration tool.

Historical SGH Precision

In the general history of geochemistry, studies indicate that a large component of total measurement error is introduced during the collection of the initial sample and in sub-sampling, and that only a subordinate amount of error in the result is introduced during preparation and analysis. A historical record encompassing many projects for SGH, including a wide variety of sample types, geology and geography, shows that the consistency and precision for the analysis of SGH *is excellent* with an overall precision of 6.8% Coefficient of Variation (%CV). When last calculated, this number has a range having a maximum of 12.4% CV, a minimum of 3.0% CV, with a standard deviation of 1.6%, in a population made up of over 400 targets (over 45,000 samples) interpreted since June of 2004. Again the precision of 6.8% CV included all of the sample types as soil from different horizons, peat, till, humus, lake-bottom sediments, ocean-bottom sediments, and even snow. When field duplicates have been revealed to us, we have found that the precision of the field duplicates are in the range of about 9 to 12 %CV. As SGH is interpreted using a combination of compounds as a chemical "class" or signature, the affect of a few concentrations that may be imprecise in a direct comparison of duplicates is not significant. Further, projects that have been re-sampled at different times or seasons are expected to have different SGH concentrations. The SGH anomalies may not be in exactly the same position or of the same intensity due to variable conditions that may have affected the dispersion of different pathfinder classes. However, the SGH "signature" as to the presence of the specific mix of SGH pathfinder classes will definitely still exist, and will retain the ability to identify the deposit type and vector to the same target location.

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LABORATORY MATERIALS BLANK – QUALITY ASSURANCE (LMB-QA)

The Laboratory Materials Blank Quality Assurance measurements (LMB-QA) shown in the SGH spreadsheet of results are matrix free blanks analyzed for SGH. These blanks are not standard laboratory blanks as they do not accurately reflect an amount expected to be from laboratory handling or laboratory conditions that may be present and affect the sample analysis result. The LMB-QA measurements are a pre-warning system to only detect any contamination originating from laboratory glassware, vials or caps. As there is no substrate to emulate the sample matrix, the full solvating power of the SGH leaching solution, effectively a water leach, is fully directed at the small surface area of the glassware, vials or caps. In a sample analysis the solvating power of the SGH leaching solution is distributed between the large sample surface area (from soil, humus, sediments, peat, till, etc.) and the relatively small contribution from the laboratory materials surfaces. The sample matrix also buffers the solvating or leaching effect in the sample versus the more vigorous leaching of the laboratory materials which do not experience this buffering effect. Thus the level of the LMB-QA reported is biased high relative to the sample concentration and the actual contribution of the laboratory reagents, equipment, handling, etc. to the values in samples is significantly lower. This situation in organic laboratory analysis only occurs at such extremely low part-per-trillion (ppt) measurement levels. This is one of the reasons that SGH uses a reporting limit and not a detection limit. The 1 ppt reporting limit used in the SGH spreadsheet of raw concentration data is 3 to 5 times greater than a detection limit. The reporting limit automatically filters out analytical noise, the actual LMB-QA, and most of the sample survey site background. This has been proven as SGH values of 1 to 3 parts-per-trillion (ppt) have very often illustrated the outline of anomalies directly related to mineral targets. **Thus all SGH values greater than or equal to 1 or 2 ppt should be used as reliable values for interpretations.**

The LMB-QA values thus should not be used to background subtract any SGH data. The LMB-QA values are only an early warning as a quality assurance procedure to indicate the relative cleanliness of laboratory glassware, vials, caps, and the laboratory water supply at the ppt concentration level. *Do not subtract the LMB-QA values from SGH sample data.*

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SGH DATA INTERPRETATION

GEOCHEMICAL ANOMALY THRESHOLD VALUE

In the interpretation of "inorganic" geochemical data one of the determinations to be made is to calculate a "Threshold" value above which data is considered anomalous. This is done on an element by element basis. In the interpretation of this "organic" geochemical data this determination is done differently. The determination of a threshold value is not calculated for each hydrocarbon compound. The determination of a threshold value is also a concentration below which geochemical data is considered as "noise" for the purposes of geochemical interpretation. As discussed, SGH uses a "Reporting Limit" instead of some type of Detection Limit. The amount of noise that is already eliminated in the data, as below the Reporting Limit of 1 part-per-trillion (shown in the data spreadsheet as "-1" as "not-detected at a Reporting Limit of 1 ppt") is equivalent to approximately 5 standard deviations of variability. *To thus calculate an additional Threshold Value is a loss of real and valuable data.* Further, in the interpretation of SGH data, individual compounds are not considered (unless explicitly mentioned in the report). The interpretation of SGH data is exclusively conducted by "compound chemical class" which is the sum of four to fourteen individual hydrocarbons in the same organic chemical class as these compounds naturally have the same chemical properties that ultimately define their spatial dispersion characteristics in their rise from a mineral target through the overburden. This combined class is more reliable than the measurement of any one compound. SGH also eliminates the need for a Threshold value determination above the Reporting Limit due to the "high specificity" of the specific hydrocarbons and the classes they form. Each of the hydrocarbons has been hand selected due to their lower probability of being found in general surface soils. Further, only those classes where the majority of the compounds are detected above the Reporting Limit are considered in the interpretation. This defines the SGH geochemistry as having less geochemical noise due to the use of a reporting limit and as having higher confidence in the use of groups (classes) of data instead of individual compounds. However the most important aspect of interpretation is the use of a forensic signature. At least three specific "Pathfinder" classes, based on the combinations or template of classes we have developed, must be present to define the hydrocarbon signature to confidently predict the presence of a specific type of mineral target. *Do not calculate another Threshold value.* **Fact:** It has been proven many times that important SGH anomalies that depict mineralization at depth can exist even with data at 3 ppt.

SGH PATHFINDER CLASS MAGNITUDE

The magnitude of any individual concentration or that of a hydrocarbon class *does not imply* that the data is of more importance or that mineralization is of higher quantity or grade. SGH interpretation must use the review of the combination of specific hydrocarbon classes to make any interpretation.

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SGH DATA LEVELING

The combination of SGH data from different field sampling events has rarely required leveling in order to combine survey grids. The only circumstances that have occasionally required leveling has been the combination of samples that are very fine in texture, thus having a combined large surface area to samples of peat that may be in nearby areas. Even after maceration of the peat and in using the maximum size of sample amenable to this test method, peat samples have a significantly lower surface area. Peat samples have only required leveling in one survey in the last 500 SGH interpretations.

In only the last year it has been observed that SGH data *may* require leveling when different field sampling events have significantly different soil temperature. It has been documented that only when "soil" samples are taken from "frozen" ground that data leveling may be required as frozen sample act as a frozen cap to the hydrocarbon flux and may collect a higher concentration of hydrocarbon compounds compared to sampling during seasons where the samples are not frozen. Only two surveys have required leveling in the last 500 SGH interpretations.

The author has taken introductory training in the leveling of geochemical data. If leveling is required, both data sets are reviewed in terms of maximum, minimum and average values for each SGH Pathfinder Class intended for use in the interpretation. Data in sectioned into quartiles and each section is assigned specific leveling factors that is then applied to one data set. It should be noted that any type of data leveling is an approximation.

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SGH RATING SYSTEM

DESCRIPTION

To date SGH has been found to be successful in the depiction of buried mineralization for Gold, Nickel, VMS, SEDEX, Uranium, IOCG, Base Metal, Polymetallic, and Copper, as well as for Kimberlites. SGH data has developed into a dual exploration tool. From the interpretation, a vertical projection of the predicted location of the target can be made as well as a statement on the rating of the comparability of the identification of the anticipated target type to that from known case studies, as an example: if the client anticipates the target to be a Gold deposit, what is the rating or comparability that the target is similar to the SGH results over a Gold deposit in Nunavut, shear hosted and sediment hosted deposits in Nevada, or Paleochannel Gold mineralization in Western Australia.

- **A rating of "6"** is the highest or best rating, and means that the SGH classes most important to describing a Gold related hydrocarbon signature are all present and consistently vector to the same location with well defined anomalies. To obtain this rating there also needs to be other SGH classes that when mapped lend support to the predicted location.

- **A rating of "5"** means that the SGH classes most important to describing a Gold signature are all present and consistently describe the same location with well defined anomalies. The SGH signatures may not be strong enough to also develop additional supporting classes.

- **A rating of "4"** means that the SGH classes most important to describing a Gold signature are mostly present describing the location with well defined anomalies. Supporting classes may also be present.

- **A rating of "3"** means that the SGH classes most important to describing a Gold signature are mostly present and describe the same location with fairly well defined anomalies. Some supporting classes may or may not be present.

- **A rating of "2"** means that some of the SGH classes most important to describing a Gold signature are present but a predicted location is difficult to determine. Some supporting classes may be present

- **A rating of "1"** is the lowest rating, and means that one of the SGH classes most important to describing a Gold signature is present but a predicted location is difficult to determine. Supporting classes are also not helpful.

The SGH rating is directly and significantly affected by the survey design. Small data sets, especially if significantly <50 sample locations, or transects/surveys that are geographically too short

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will automatically receive a lower rating no matter how impressive an SGH anomaly might be. When there is not enough sample locations to adequately review the SGH class geochromatography, or when the sample spacing is inadequate, or if the spacing is highly variable such that it biases the interpretation of the results, then the confidence in the interpretation of any geochemistry is adversely affected. The SGH rating is not just a rating of the agreement between the SGH pathfinder classes for a particular target type; it is a rating of the overall confidence in the SGH results from this particular survey. The interpretation is only based on the SGH results without any information from other geochemical, geological or geophysical information unless otherwise specified.

HISTORY & UNDERSTANDING

The subjective SGH rating system has been used since 2004 when Activation Laboratories started providing an SGH Interpretation Report with ever submission for SGH analysis to aid our clients in understanding this organic geochemistry and ensuring that they obtain the best results for their surveys. As explained in the previous section, the SGH rating is not just a rating of how definitive an SGH anomaly is, and it is not based just on the map(s) provided in this report. It is a rating of "confidence in the interpreted anomaly" from the combination of:

- (i) are the expected SGH Pathfinder Classes of compounds present from the template for this target type (one Pathfinder Class map is shown in the report, at least three must be present to adequately describe the correct signature for a particular target),
- (ii) how well do these SGH Pathfinder Classes agree in describing an particular area,
- (iii) how well does this agreement compare to SGH case studies over known targets of that type,
- (iv) how well is the interpreted anomaly defined by the survey (i.e. a single transect does not provide the same confidence as a complete grid of samples), and
- (v) is there at least a minimum of 50 sample locations in the survey so that there may be an adequate amount of data to observe the geochromatography of the different SGH Pathfinder Class of compounds.

The question often arises by clients as to the frequency of a rating, e.g. "how often is a rating of 5.0 given in an interpretation". To better understand this we present this review of the history of the SGH rating program since 2004 and some of the underlying situations that can affect the historical rating charts. Originally it was recommended that a minimum of 35 sample location be used for small target exploration, however it was quite quickly realized that this is often insufficient and at least 50 sample locations were required. In 2007 the rating scale was refined to include increments of 0.5 units rather than just integer values from 0 to 6.

A rating frequency may be biased high as most clients conduct an orientation study over a known target, thus several of these projects result in high ratings. Note that, at this time, the rating

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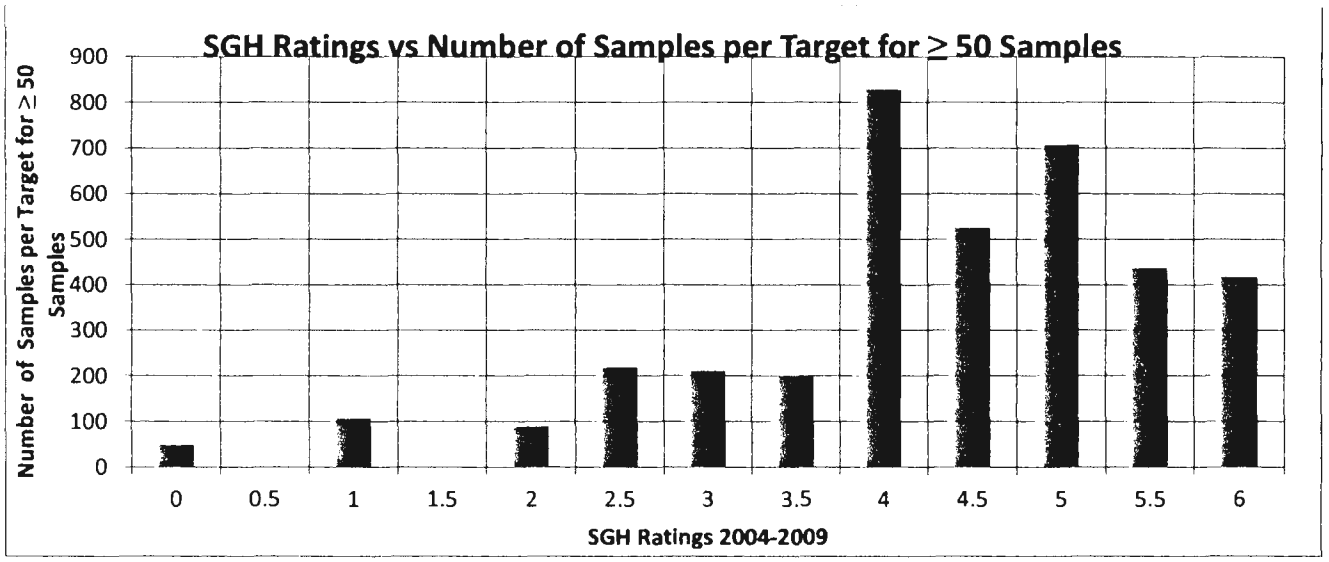
is not said to be linked to grade of a deposit or depth to the target. Even in exploration surveys clients tend to submit samples over more promising targets due to knowledge of the geology and prior geochemical or geophysical results. As shown in the following chart, projects with SGH data from 200 or more sample locations have a higher level of confidence in the interpretation as the geochromatography of the SGH Pathfinder Classes of compounds can be more completely observed and reviewed.



The rating frequency may be biased low as research projects often include a bare minimum of samples to reduce costs. Research projects may also be over targets known to be difficult to depict with geochemistry. Multiple targets in close vicinity in a survey may result in a low bias as the Pathfinder Class geochromatography is more difficult to deconvelute. Ratings may also be biased low if less than the recommended 50 sample locations is submitted as indicated by the following chart. This chart also illustrates that there is no interpretation bias to a particular rating value.

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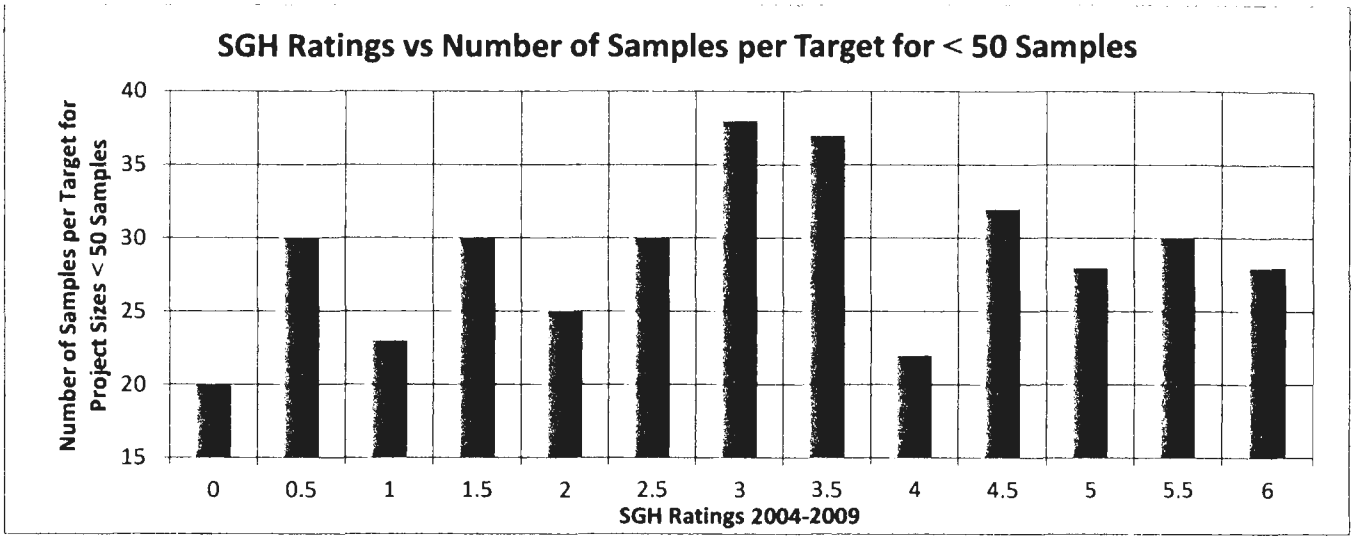
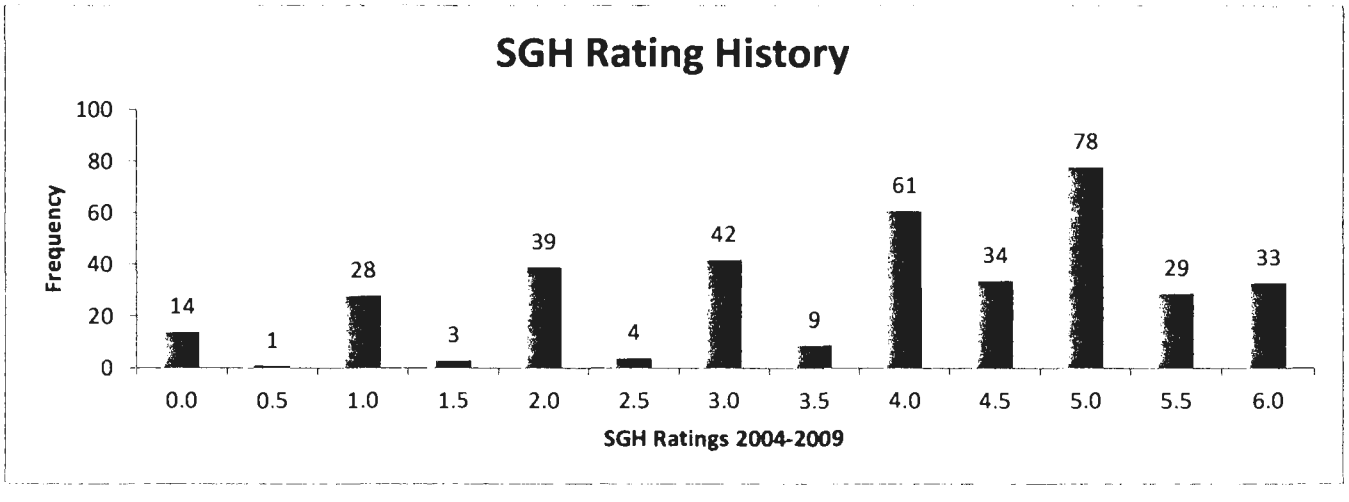


The overall rating frequency for over 400 targets from January 2004 to December 2009 is shown in the chart below illustrating that surveys over more promising targets are most often submitted for best use of research or exploration dollars. It also indicates that the 0.5 increments were less frequent as they started in 2007.



More specific for SGH interpretation for Gold targets, the overall rating frequency for 97 targets from January 2004 to December 2009 is shown in the chart below that also illustrates that surveys over more promising Gold targets are most often submitted for best use of research or exploration dollars.

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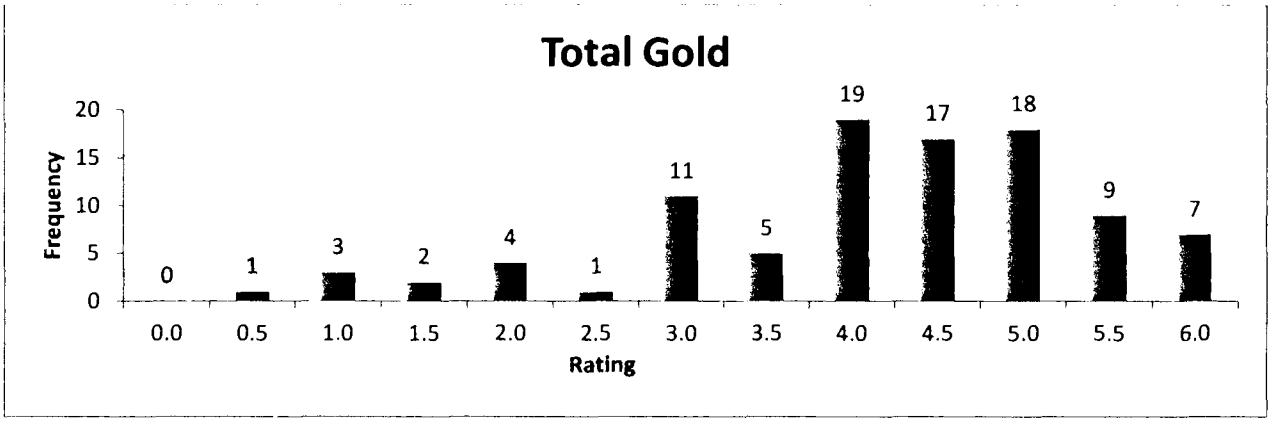

DISCLAIMER

This "SGH Interpretation Report" has been prepared to assist the user in understanding the development and capabilities of this Organic based Geochemistry. The interpretation of the Soil Gas Hydrocarbon (SGH) data is in reference to a template or group of SGH classes of compounds specific to a type of mineralization or target that is chosen by the client (i.e. the template for gold, copper, VMS, uranium, etc.). Although the template of SGH Pathfinder Classes that has been developed through research and review of case studies has proven to be able to address many lithologies, Activation Laboratories Ltd. cannot guarantee that the template is applicable to every type of target in every type of environment. The interpretation in this report attempts to identify an anomaly that has the best SGH signature in the survey for the type of mineralization or target chosen by the client. However, this interpretation is not exhaustive and there may be additional SGH anomalies that may warrant interest. It should not be viewed due to the generation of this SGH report, that Activation Laboratories Ltd. has the expertise or is in the business of interpreting geochemical data as a general service. As the author is the originator of the SGH geochemistry, has researched and developed this exploration tool since 1996, and has produced similar interpretations using SGH data for over 500 surveys, he is perhaps the best qualified to prepare this interpretation as assistance to clients wishing to use SGH. Activation Laboratories Ltd. can offer assistance in general suggestions for sampling protocols and in sample grid location design; however we accept no responsibility to the appropriateness of the samples taken. Activation Laboratories Ltd. has made every attempt to ensure the accuracy and reliability of the information provided in this report. Activation Laboratories Ltd. or its employees, does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information or description of processes contained in this report. The information is provided "as is" without a guarantee of any kind in the interpretation or use of the results of the SGH geochemistry. The client or user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly form using any information or material contained in this report or using data from the associated spreadsheet of results.

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INTERPRETATION OF SGH RESULTS
A11-7345 – TRUE NORTH MINERAL LABORATORIES
CLEAVER SURVEY

SGH SOIL SAMPLE SURVEY INTERPRETATION

This report is based on the SGH results from the analysis of a total of 84 soil samples. The Cleaver survey is comprised of a regular grid with samples spaced at approximately 100 metres apart. Sample coordinates were provided for mapping of the SGH results for these soil samples as Easting and Northing coordinates based on a NAD 83 Zone 17 reference.

SGH SURVEY – SOIL SAMPLE LOCATION MAP

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TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION

Note that the associated SGH results are presented in a separate Excel spreadsheet. This raw data is semi-quantitative and is presented in units of pg/g or *parts-per-trillion* (ppt) as the concentration of specific hydrocarbons in the sample. The number of samples submitted for this project is adequate to use SGH as an exploration tool. As SGH is an organic geochemistry it is essentially "blind" to the presence of any inorganic or actual base metal/ elemental content in the each sample analyzed. SGH has been proven to discriminate between false soil anomalies or mobilized anomalies and actually locate the source deposition. SGH is a deep-penetrating geochemistry and has been proven to locate many types of mineralization at several hundred metres below the surface irrespective of the type of overburden. Note that the SGH data is only reviewed for the particular target deposit type requested, in this interpretation for the presence of Gold based deposits. It is also assumed that there is only one potential target. If known, in surveys with several complex geophysical targets, to obtain the best interpretation the client should indicate that there are possibly multiple targets. The possibility of multiple targets should be known due to potential overlap and the increased complexity of resulting geochromatographic anomalies, which could alter the interpretation as to which targets are mineralized and which ones are not. To address this at the Cleaver Survey, a plan view map was provided (as on page 26) that illustrated the sampling grid and the occurrence of previously detected EM (Electromagnetic) conductors focused as the small solid yellow circular outlines.

The overall precision of the SGH analysis for the soil samples in this Cleaver Survey was excellent as demonstrated by 6 samples taken from this survey which were used for laboratory replicate analysis. The average Coefficient of Variation (%CV) of the replicate results for the project samples in this submission was 5.4 % which represents an excellent level of analytical performance especially at such low parts-per-trillion concentrations.

No leveling or statistics were conducted on the data in this report for mapping or interpretation purposes aside from the use of a Kriging trending algorithm in the GeoSoft Oasis Montaj mapping software. **This interpretation is based only on this survey and on these SGH results.**

The SGH maps shown in plan and in 3D views in this report are SGH "Pathfinder Class maps" for targeting various hydrocarbon flux signatures related to Gold mineralization. These maps represent the simple summation of several individual hydrocarbon compound concentrations that are grouped from within the same organic chemical class. SGH Pathfinder Class maps have been shown to be robust as they are each described using from 4 to 14 (unless otherwise stated) chemically related SGH compounds which are simply summed to create each class map. Thus each map has a higher level of confidence as it is not illustrating just one compound measurement. A legend of the compound classes appears at the bottom of the SGH data spreadsheet.

The *overall* SGH interpretation Rating has even a higher level of confidence as it further relies on the consensus between at least two additional pathfinder classes. A combination of these SGH Pathfinder Classes potentially defines the signature of a target at depth if present.

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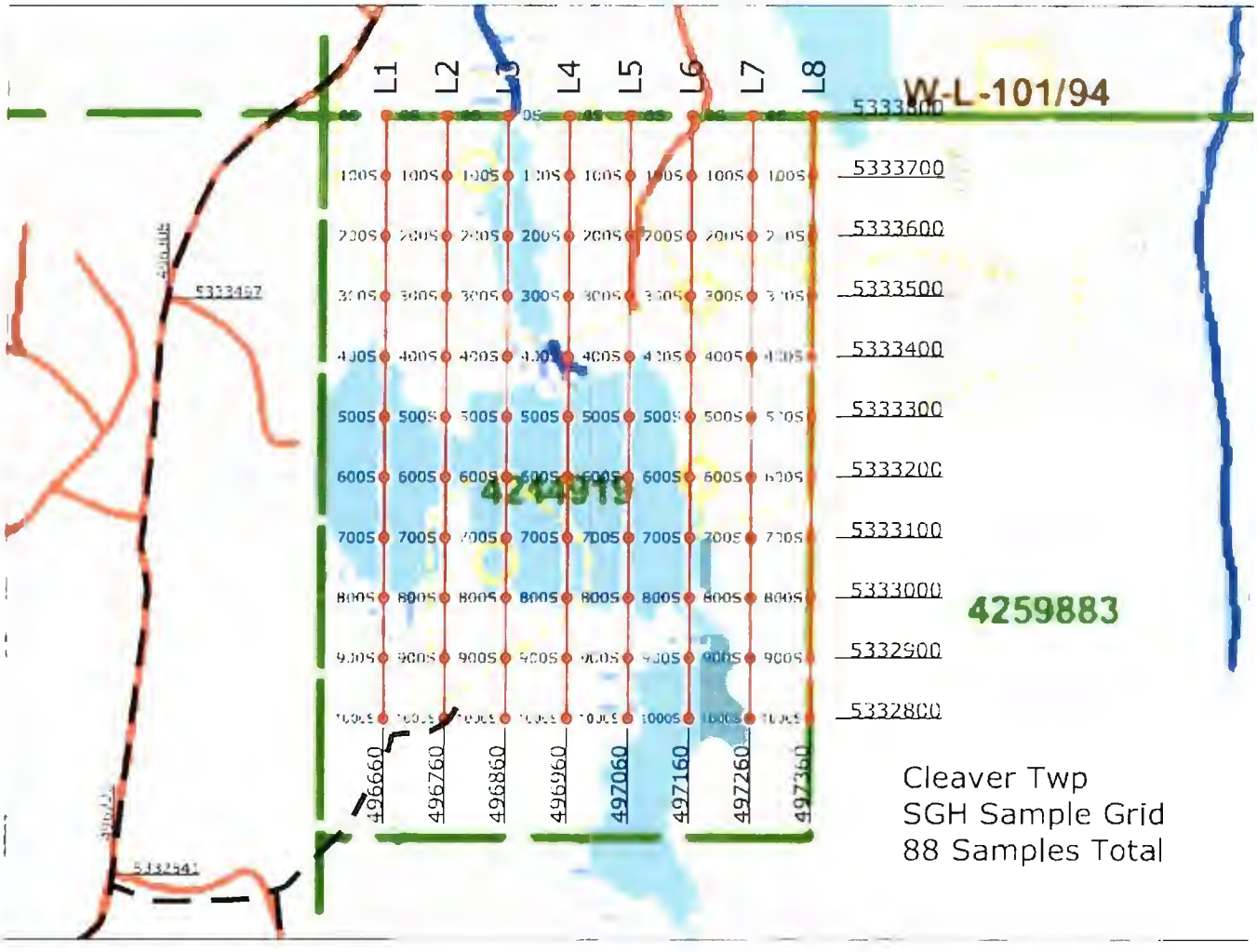
TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION
SAMPLE GRID MAP WITH GEOGRAPHY AND EM CONDUCTORS



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TRUE NORTH MINERAL LABORATORIES - CLEAVER SURVEY
SOIL SAMPLE SGH SURVEY INTERPRETATION
SGH "GOLD" PATHFINDER CLASS MAPS

The GOLD template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. At least three Pathfinder Class maps, associated with the SGH signature developed for GOLD must be present to begin to be considered for assignment of a good rating relative to the SGH performance in case studies over known GOLD based mineralization. The Pathfinder Class anomalies must also concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class.

SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "REDOX cell locator". Many SGH surveys for GOLD and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Nested-Halo", and "Rabbit-Ear" or "Halo" type anomalies are all typically observed within the SGH data set from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

Note that any concentration value in the accompanying Excel spreadsheet greater than the "Reporting Limit" of 1 ppt is important data and has been able to depict mineralization at depth. The majority of the variability or noise has already been eliminated; additional filtering will adversely affect any interpretation. Note that a Kriging trending algorithm has been applied to the mapping routine in the Geosoft Oasis Montaj software in the development of the SGH Class maps. SGH concentrations are in some way probably related to the amount of mineralization present and the grade of mineralization, which probably defines the characteristics of the biofilm(s) in contact with the deposit, as well as being related to the depth to mineralization. SGH results have also been shown to correlate well with geophysical anomalies such as magnetic anomalies and those of CSAMT.

SGH is a "deep penetrating" geochemistry but also works well for relatively shallow targets. Targets shallower than about 3 to 5 metres will have a reduced SGH signal due to interaction with atmospheric conditions and samples taken right at surface outcrops will have even weaker signals due to a higher degree of weathering from various processes on these volatile and semi-volatile organic hydrocarbons.

The SGH Pathfinder Class map shown on pages 29 and 30, has consistently been associated with the delineation of GOLD based mineralization and is just one of the Pathfinder Class maps used in the interpretation (other SGH Pathfinder Class maps are not shown at this price point and report turnaround time).

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TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY SOIL SAMPLE SGH SURVEY INTERPRETATION FOR GOLD

The plan view map for one of the most reliable SGH GOLD Pathfinder Classes is shown on page 29. From the review of this map and other SGH GOLD and VMS associated Pathfinder Class maps it is evident that the interpretation of the SGH data for the Cleaver property is complex. This SGH GOLD Pathfinder class is expected to show apical type anomalies the majority of the time that directly delineates Gold mineralization that may be present at some depth directly below the apical anomaly.

The interpretation in this report for Gold mineralization has used the results from some of the research with SGH in recent years which has focused on the potential that the SGH data might be able further dissect and understand the relationships between the chemical Redox conditions in the overburden and the development of an electrochemical cell. This research has resulted in the development by Activation Laboratories of a new enhanced model of the most recent electrochemical/ Redox cell theory originated by Govett (1976) that has graduated to the current model by Hamilton (2004, 2009). The new enhanced model developed by Sutherland (2011) takes the general anomalies expected by the Hamilton model to a higher resolution. This has resulted is a more confident level of interpretation of SGH and the introduction of a more appropriate terminology for SGH as "Spatiotemporal Geochemical Hydrocarbons" rather than Soil Gas Hydrocarbons. The analysis and the SGH acronym has remained the same. With this enhanced interpretation we mark the beginning of the ability to make more confident statements regarding the possible depth to mineralization as we dissect the Redox cell relative to electrochemical theory with 3D-SGH. This model has been formally introduced at the International Applied Geochemistry Symposium organized by The Association of Applied Geochemists to take place in Rovaniemi, Finland, in August 2011.

In interpretation of the SGH GOLD signature at the Cleaver Survey a north-south apical anomaly is readily apparent as shown within the yellow dashed outline applied to the plan view map on page 29. This lower molecular weight class is expected to show an apical anomaly that is located directly over possible GOLD mineralization. The author has also put the previous interpretation for VMS mineralization for reference as the previously documented black dotted and black dashed ovals. It is believed that it is not coincidence that the apical anomaly, within the dashed yellow outline, flanks, to the west and northwest, the large halo anomaly associated with potential VMS mineralization. It is also believed that it is not coincidence that the apical anomaly, within the dashed yellow outline, lies between the two most intense anomalous signals in the SGH Pathfinder Class map associated with potential VMS mineralization. The existence of this specific positioning lends direct and important confirmation to the interpretation of the apical anomaly related to Gold.

These SGH results should be reviewed in tandem with other site information available to True North Mineral Laboratories.

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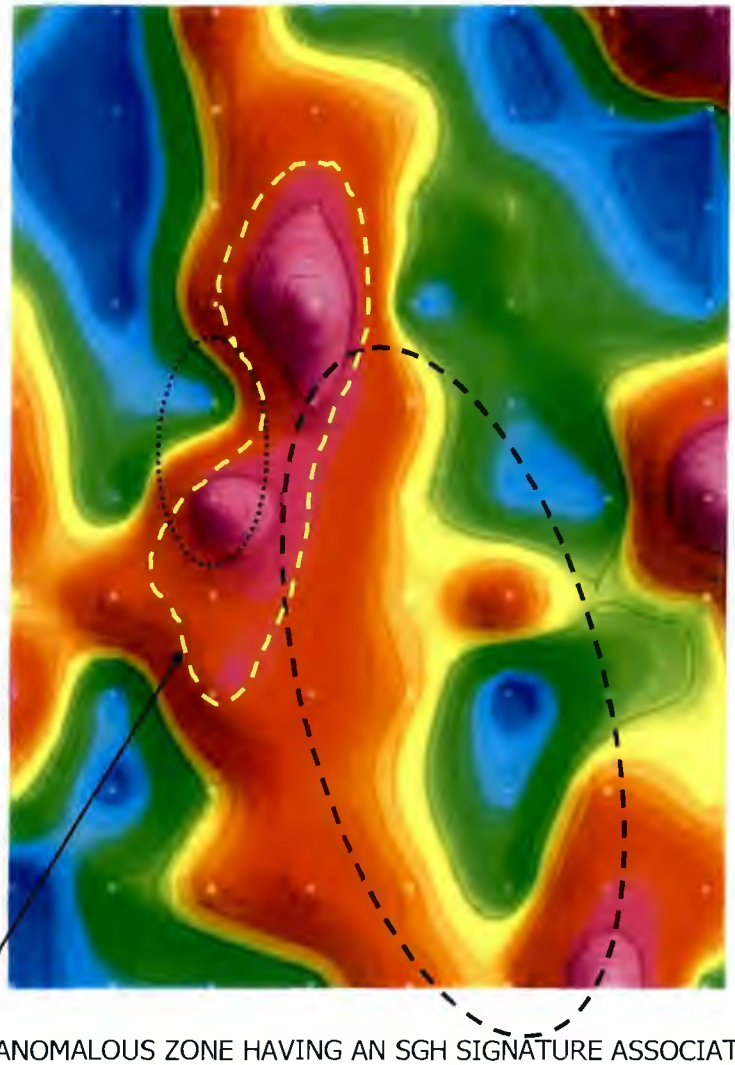
SGH "GOLD" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



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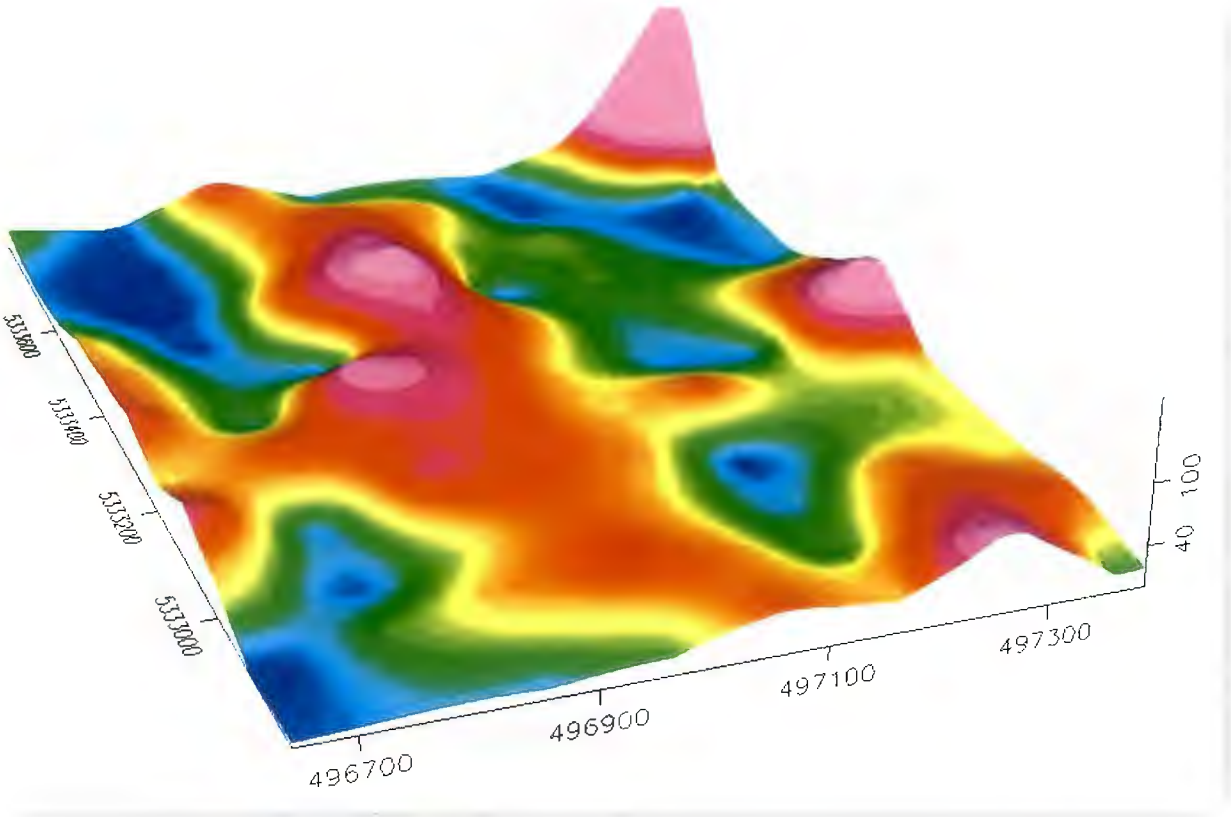
SGH "GOLD" PATHFINDER CLASS MAP – TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY



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SGH RATING FOR THE SGH "GOLD" TEMPLATE - TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY - SOIL SAMPLE SGH SURVEY

After review of all of the SGH Pathfinder Class maps related to GOLD based mineralization, the SGH results from these soil samples suggest a **"rating of 5.0"** for the area with the yellow dashed outline as the apical anomalous zone at the Cleaver property survey.

The client should use a combination of these SGH results and its report with additional geochemical, geophysical, and geological information to possibly obtain a more confident and precise target location.

This rating is based on a scale of 6.0, in 0.5 increments, with a value of 6.0 being the best. This rating represents the similarity of these SGH results, and the associated Pathfinder Class maps, primarily to case studies for a Gold case study in Nunavut, shear hosted as well as sediment hosted deposits in Nevada, and Paleochannel Gold deposits in Australia. The general SGH template used for Gold has been developed primarily from these study areas. It has since been enhanced and has been proven effective from the interpretation over many other surveys in many different geographical regions and for a wide variety of lithologies for Gold. The degree of confidence in the rating only starts to be "good" at a level of 4.0.

Potential Drill targets would usually be expected to be in the centre of this apical anomaly as directly over the greatest mass of mineralization potentially related to Gold at depth. The identification of a drill target is not an explicit recommendation by Activation Laboratories Ltd. to drill test the associated SGH anomaly. A drill target is implied to ensure that the reader is aware of the location having the highest confidence of being the location of the vertical projection of the mineralization, based only on SGH data. Other geological, geochemical and/or geophysical information should always be considered. This is also not a recommendation for vertical drilling. Vertical drilling may not be the best approach to test the SGH anomaly in this area. Activation Laboratories Ltd. has no experience in actual exploration drilling technique.

1336 Sandhill Drive • Ancaster, ON • L9G 4V5 • CANADA • Tel: (905) 648-9611 • Fax: (905) 648-9613 • Toll Free: 1-888-ACTLABS

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SGH SURVEY – RECOMMENDATIONS
TRUE NORTH MINERAL LABORATORIES - CLEAVER PROPERTY
SOIL SAMPLE SGH SURVEY

Additional samples to expand the survey grid in each compass direction may help better explain the few anomalies that are at the borders of the survey. These additional samples may not improve the ratings now documented, but may improve the overall understanding of the Cleaver property. Please refer to the general recommendations for additional or in-fill sampling for SGH in the section below.

GENERAL RECOMMENDATIONS FOR ADDITIONAL OR IN-FILL SAMPLING FOR SGH ANALYSIS

Based on the results of this report and/or other information, the client may decide that in-fill sampling may be warranted. To obtain the best results from additional sampling for SGH it is recommended that sample locations within, or bordering, the area of interest be re-sampled rather than just combining new sample results with the sample data from the initial survey. Although several SGH surveys have previously been easily and directly, combined without data leveling, it cannot be guaranteed that data leveling will not be required. It has been found that data leveling is more apt to be required should the new samples be collected under significantly different environmental conditions than during the initial sample survey, i.e. summer collection versus winter collection. The process of data leveling adds a minimum of 3 to 5 days of work to conduct the additional data evaluation, develop additional plots of the results, conduct new interpretations, and in additional report descriptions. Results from data leveling is also always considered "an approximation", thus the confidence in a combined interpretation will be lower that the interpretation from samples collected during one excursion to the field and submitted as one survey. As of September 2010, an additional cost will be invoiced should data leveling operations be required if the client requests that two SGH data sets be interpreted and reported together. Thus re-sampling a few of the original sample locations will provide a faster turnaround time for results and provide more accurate and confident surveys for evaluation and aid in deciding specific drill targets.

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Cautionary Note Regarding Assumptions and Forward Looking Statements

The statements and target rating made in the Soil Gas Hydrocarbon (SGH) interpretive report or in other communications may contain certain forward-looking information related to a target or SGH anomaly.

Statements related to the rating of a target are based on comparison of the SGH signatures derived by Activation Laboratories Ltd. through previous research on known case studies. The rating is not derived from any statistics or other formula. The rating is a subjective value on a scale of 0 to 6 relative to the similarity of the SGH signature reviewed compared to the results of previous scientific research and case studies based on the analysis of surficial samples over known ore bodies. No information on other geochemistries, geophysics, or geology is usually available as additional information for the interpretation and assignment of a rating value unless otherwise stated. The rating does not imply ore grade and is not to be used in mineral resource estimate calculations. References to the rating should be viewed as forward-looking statements to the extent that it involves a subjective comparison to known SGH case studies. As with other geochemistries, the implied rating and anticipated target characteristics may be different than that actually encountered if the target is drilled or the property developed.

Activation Laboratories Ltd. may also make a scientifically based reference in this interpretive report to an area that might be used as a drill target. Usually the nearest sample is identified as an approximation to a "possible drill target" location. This is based only on SGH results and is to be regarded as a guide based on the current state of this science.

Unless stated, Activation Laboratories Ltd. has not physically observed the exploration site and has no prior knowledge of any site description or details. Actlabs makes general recommendations for sampling and shipping of samples. Unless stated, the laboratory does not witness sampling, does not take into consideration the specific sampling procedures used, season, handling, packaging, or shipping methods. The majority of the time, Activation Laboratories Ltd. has had no input into sampling survey design. Where specified Activation Laboratories Ltd. may not have conducted sample preparation procedures as it may have been conducted at the client's assigned laboratory. Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ scientifically which may impact the associated interpretation and target rating from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended.

In general, any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions, future events or performance are not statements of historical fact. These "scientifically based educated theories" should be viewed as "forward-looking statements".

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Readers of this interpretive report are cautioned not to place undue reliance on forward-looking information. Forward looking statements are made based on scientific beliefs, estimates and opinions on the date the statements are made and the interpretive report issued. The Company undertakes no obligation to update forward-looking statements or otherwise revise previous reports if these beliefs, estimates and opinions, future scientific developments, other new information, or other circumstances should change that may affect the analytical results, rating, or interpretation.

Actlabs nor its employees shall be liable for any claims or damages as a result of this report, any interpretation, omissions in preparation, or in the test conducted. This report is to be reproduced in full, unless approved in writing.

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E-mail: dalesutherland@actlabsint.com • Web Site: www.actlabs.com

Date Submitted at Actlabs Ancaster: July 25, 2011

Date Analyzed: August 22 – August 24, 2011

VMS Interpretation Report: September 16, 2011

GOLD Interpretation report: November 2, 2011

TRUE NORTH MINERAL LABORATORIES

190 Quartz Avenue

Timmins, Ontario, Canada

P4N 4L7

Attention: Mr. Kevin Cool

RE: Your Reference: Cleaver Survey – Interpreted for GOLD Targets

Activation Laboratories Workorder: A11-7345

CERTIFICATE OF ANALYSIS

84 Soil samples were submitted for analysis.

Sample preparation was completed at Actlabs Ancaster ON Canada facility:
Code S4 – Drying at 40°C, Sieving -60 mesh

The following analytical package was requested:
Code SGH – Soil Gas Hydrocarbon Geochemistry

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REPORT/WORKORDER: A11-7345

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at the time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of the material submitted for analysis.

Notes: The SGH – Soil Gas Hydrocarbon Geochemistry is a semi-quantitative analytical procedure to detect and measure 162 hydrocarbon compounds as the organic signature in the sample material collected from a survey area. It is not an assay of mineralization but is a predictive geochemical tool used for exploration. This certificate pertains only to the SGH data presented in the associated Microsoft Excel spreadsheet of results.

The author of this SGH Interpretation Report, Mr. Dale Sutherland, is the creator of the SGH organic geochemistry. He is a Chartered Chemist (C.Chem.) and Forensic Scientist specializing in organic chemistry, and a member of The Association of Applied Geochemists. He is not a professional geologist or a professional geochemist.

CERTIFIED BY:

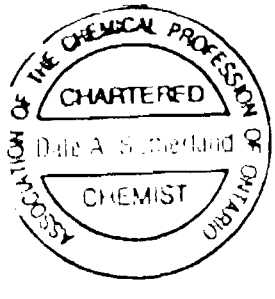
D Sutherland

Dale Sutherland, B.Sc.,B.Sc.,B.Ed.,C.Chem.

Forensic Scientist, Organics Manager,

Director of Research

Activation Laboratories Ltd.



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Appendix II

SGH Raw Data

True North Mineral Laboratories
Kevin Cool
-1=Reporting Limit of 1pg/g (ppt=parts per trillion)

SOIL GAS HYDROCARBONS
(SGH) by GC/MS
CLEAVER PROJECT SITE

Activation Laboratories Ltd.
Date: August 24, 2011
R=Replicate Sample

	001 - LA	002 - LA	003 - LB	004 - LA	005 - LB	006 - LB	007 - LA	008 - LB	009 - LB	010 - LB	011 - LA	012 - LB	013 - LBA	014 - LB
L1-0S	17	10	14	10	2	3	5	4	-1	-1	-1	-1	-1	-1
L1-100S	16	48	9	10	1	2	8	4	-1	-1	2	-1	1	-1
L1-200S	22	60	11	17	-1	-1	7	4	-1	-1	3	-1	2	-1
L1-300S	24	66	17	18	2	4	9	7	-1	-1	-1	-1	-1	1
L1-400S	34	74	17	15	4	5	8	6	-1	-1	-1	-1	-1	-1
L1-400S-R	41	81	20	18	4	5	10	8	1	-1	-1	-1	1	-1
L1-500S	32	112	15	27	4	7	14	9	2	1	-1	-1	3	-1
L1-600S	29	82	13	22	4	6	10	7	-1	-1	-1	-1	2	-1
L1-700S	44	102	13	30	4	7	14	14	2	2	-1	-1	2	-1
L1-800S	5	65	17	21	3	3	8	6	-1	-1	-1	-1	1	-1
L1-900S	10	51	9	12	-1	-1	6	3	-1	-1	1	-1	2	-1
L1-1000S	4	11	10	12	-1	2	6	3	-1	-1	1	-1	1	-1
L2-0S	11	52	10	9	1	2	6	1	-1	-1	2	-1	2	-1
L2-100S	3	9	9	11	1	2	5	-1	-1	-1	2	-1	3	-1
L2-200S	19	53	9	9	-1	2	5	1	-1	-1	2	-1	2	-1
L2-300S	18	51	11	14	1	1	5	-1	-1	-1	3	-1	2	-1
L2-400S	21	59	11	15	2	2	5	5	-1	-1	2	-1	2	-1
L2-500S	4	55	12	14	-1	3	6	3	-1	-1	2	-1	1	-1
L2-600S	41	103	15	24	4	7	13	9	2	1	-1	-1	4	-1
L2-700S	17	49	12	10	1	2	5	1	-1	-1	1	-1	-1	-1
L2-800S	20	87	9	12	-1	-1	7	2	-1	-1	1	-1	2	-1
L2-800S-R	20	66	12	14	-1	1	6	3	-1	-1	1	-1	1	-1
L2-900S	20	64	14	15	2	4	7	5	-1	-1	2	-1	-1	-1
L2-1000S	21	60	13	17	-1	3	8	3	-1	-1	2	-1	1	-1
L3-0S	33	75	21	17	4	6	8	8	1	1	-1	-1	-1	-1
L3-100S	24	77	13	24	2	4	15	8	2	2	-1	-1	-1	-1
L3-200S	23	68	13	20	2	4	13	7	2	1	-1	-1	-1	-1
L3-300S	29	89	19	22	3	6	15	8	2	2	-1	-1	-1	-1
L3-400S	19	61	11	9	-1	2	6	2	-1	-1	3	-1	-1	-1
L3-500S	35	114	17	27	4	9	13	15	2	2	-1	-1	3	-1
L3-600S	42	125	16	37	4	8	12	9	2	1	-1	-1	4	-1
L3-700S	37	108	16	26	4	9	13	9	2	-1	-1	-1	4	-1
L3-800S	25	100	15	26	2	4	13	5	-1	-1	3	-1	1	-1
L3-900S	21	63	16	16	2	5	7	6	-1	1	4	-1	2	-1
L3-1000S	25	77	12	28	2	4	7	1	-1	-1	4	-1	3	-1
L4-0S	18	54	12	14	-1	2	8	4	-1	-1	2	-1	1	-1
L4-100S	18	57	14	14	3	5	6	8	-1	-1	3	-1	-1	-1
L4-100S-R	22	64	16	17	3	7	7	9	2	1	3	-1	1	-1
L4-200S	23	14	15	17	4	6	7	16	2	1	3	-1	2	-1
L4-300S	24	68	19	22	5	10	8	15	3	3	6	1	5	-1
L4-400S	41	100	25	25	5	7	13	9	2	-1	-1	-1	-1	-1
L4-700S	33	89	15	20	5	9	12	7	-1	1	-1	-1	2	-1
L4-900S	24	87	16	32	4	7	20	8	-1	1	5	-1	2	-1
L4-1000S	22	12	12	14	4	4	7	4	-1	-1	2	-1	1	-1
L5-0S	4	55	13	10	3	3	-1	3	-1	-1	2	-1	-1	-1
L5-100S	23	68	16	17	4	6	8	3	-1	-1	3	-1	2	-1
L5-200S	3	60	14	13	3	4	7	4	-1	-1	2	-1	-1	-1
L5-300S	19	56	12	15	1	2	7	2	-1	-1	2	-1	1	-1
L5-400S	23	95	14	19	5	6	9	7	-1	-1	-1	-1	-1	-1
L5-500S	24	66	13	12	5	6	6	5	-1	-1	-1	-1	2	-1
L5-500S-R	17	69	12	14	4	5	6	6	-1	-1	-1	-1	1	-1
L5-600S	25	75	12	14	5	6	5	6	-1	-1	-1	-1	-1	-1
L5-700S	150	97	13	25	5	7	8	7	-1	-1	-1	-1	1	-1
L5-900S	19	52	17	48	5	6	14	6	-1	-1	-1	-1	1	-1

	001 - LA	002 - LA	003 - LB	004 - LA	005 - LB	006 - LB	007 - LA	008 - LB	009 - LB	010 - LB	011 - LA	012 - LB	013 - LBA	014 - LB
L5-1000S	30	76	19	17	5	6	7	7	1	-1	-1	-1	-1	-1
L6-0S	12	49	11	9	1	2	5	2	-1	-1	1	-1	-1	-1
L6-100S	14	46	10	4	-1	2	5	3	-1	-1	1	-1	2	-1
L6-200S	18	10	12	11	4	5	6	5	-1	-1	2	-1	-1	-1
L6-300S	5	12	14	11	4	4	6	2	-1	1	3	-1	2	-1
L6-400S	17	50	11	12	2	3	6	4	-1	-1	2	-1	1	-1
L6-500S	8	11	11	10	1	2	6	4	-1	-1	2	-1	-1	-1
L6-600S	11	12	21	14	5	7	6	6	-1	-1	1	-1	1	-1
L6-700S	19	45	10	8	-1	2	4	-1	-1	-1	1	-1	-1	-1
L6-800S	11	55	12	12	1	1	8	4	-1	-1	1	-1	-1	-1
L6-900S	20	64	12	10	2	2	6	4	-1	-1	2	-1	-1	-1
L6-900S-R	5	66	13	12	4	4	7	1	-1	-1	-1	-1	-1	-1
L6-1000S	21	63	12	16	4	6	10	8	-1	-1	2	-1	2	-1
L7-0S	26	96	19	22	4	5	9	6	1	-1	1	-1	3	-1
L7-100S	20	66	13	16	2	2	11	3	-1	-1	3	-1	-1	-1
L7-200S	19	62	13	18	2	2	9	1	-1	-1	2	-1	-1	-1
L7-300S	19	58	15	17	-1	1	8	6	-1	-1	2	-1	-1	-1
L7-400S	23	67	14	18	3	5	12	5	-1	-1	3	-1	1	-1
L7-500S	16	52	10	12	-1	1	6	6	-1	-1	3	-1	-1	-1
L7-600S	19	63	13	14	-1	3	6	8	1	-1	3	-1	2	-1
L7-700S	21	65	14	18	-1	4	9	6	-1	-1	3	-1	-1	-1
L7-800S	25	71	15	21	3	5	23	8	-1	1	3	-1	6	-1
L7-900S	119	129	27	30	4	6	12	6	-1	-1	-1	-1	3	-1
L7-1000S	32	104	32	31	7	8	10	11	-1	-1	-1	-1	2	-1
L8-0S	43	153	70	42	8	11	14	30	3	1	-1	-1	5	2
L8-100S	3	58	12	12	-1	3	7	2	-1	-1	2	-1	1	-1
L8-200S	19	55	12	14	1	3	6	1	-1	-1	2	-1	2	-1
L8-200S-R	20	59	11	14	-1	2	7	4	-1	-1	1	-1	2	-1
L8-300S	4	56	13	14	-1	2	8	1	-1	-1	2	-1	1	-1
L8-400S	29	87	19	23	4	7	10	8	1	-1	-1	-1	3	-1
L8-500S	26	41	45	29	4	4	-1	16	2	-1	1	-1	2	-1
L8-600S	44	95	16	21	3	4	9	5	-1	-1	2	-1	3	-1
L8-700S	17	53	16	6	2	3	6	6	-1	-1	-1	-1	2	-1
L8-800S	20	66	14	14	3	4	8	7	-1	-1	4	-1	1	-1
L8-900S	22	71	16	17	3	5	10	8	2	1	5	-1	6	-1
L8-1000S	14	64	14	15	4	4	10	1	-1	-1	3	-1	2	-1
L1-600S B	22	85	11	27	4	6	3	5	-1	-1	-1	-1	1	-1
LMB-QA	9	44	8	7	-1	-1	2	-1	-1	-1	-1	-1	-1	-1
LMB-QA	15	7	11	4	-1	-1	2	-1	-1	-1	-1	-1	-1	-1
LMB-QA	4	44	14	5	2	2	2	1	-1	-1	-1	-1	-1	-1
LMB-QA	12	40	9	3	-1	-1	1	-1	-1	-1	-1	-1	-1	-1

SOIL GAS HYDROCARBONS (SGH) by GC/MS

A11-7345 - Date: August 22, 2011 - Activation Laboratories Ltd.
Results represent only the material tested. Actlabs is not liable for any claim/damage from use of this report in excess of the test cost. Unless requested samples are discarded in 90 days.
This report is only to be reproduced in full.

True North Mineral Laboratories - Kevin Cool
Cleaver Project Site

R=Replicate Sample

	001 - LA	002 - LA	003 - LB	004 - LA	005 - LB	006 - LB	007 - LA	008 - LB	009 - LB	010 - LB	011 - LA	012 - LB	013 - LBA	014 - LB

-1=Reporting Limit of 1pg/g (ppt=parts per trillion)
LMB-QA = Laboratory Materials Blank - Quality Assurance

LEGEND FOR COLUMN HEADINGS - SGH COMPOUND CLASSES

LA, HA, LBA, HBA = ALKYL-ALKANES
LB, HB, LPB, HPB = ALKYL-BENZENES
LAR, MAR, HAR = ALKYL-AROMATICS
LBI, MBI, HBI, LPH, MPH, HPH = ALKYL-POLYAROMATICS
THI = ALKYL-DIVINYLENE SULPHIDES
ALK = ALKYL-ALKENES

	015 - LAR	016 - LB	017 - LB	018 - LB	019 - LB	020 - LA	021 - LPH	022 - LBA	023 - LAR	024 - LB	025 - LAR	026 - LBA	027 - LB	028 - ALK
L1-0S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1
L1-100S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L1-200S	-1	1	2	1	-1	4	-1	1	-1	-1	-1	3	1	2
L1-300S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L1-400S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L1-400S-R	-1	-1	1	-1	-1	3	-1	2	-1	-1	-1	2	-1	-1
L1-500S	-1	1	2	1	-1	5	-1	4	-1	-1	-1	4	-1	1
L1-600S	-1	-1	1	-1	-1	3	-1	1	-1	-1	-1	2	-1	-1
L1-700S	-1	1	2	2	-1	6	-1	2	-1	-1	-1	4	-1	2
L1-800S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L1-900S	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	2	-1	-1
L1-1000S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L2-0S	-1	-1	-1	-1	-1	2	-1	1	-1	-1	-1	2	-1	1
L2-100S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L2-200S	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	2	-1	1
L2-300S	-1	-1	-1	-1	-1	3	-1	1	-1	-1	-1	3	-1	1
L2-400S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	3	-1	1
L2-500S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	3	-1	1
L2-600S	-1	1	2	1	-1	4	-1	2	-1	-1	-1	3	-1	1
L2-700S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	1	-1	-1
L2-800S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	1	-1	-1
L2-800S-R	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	2	-1	-1
L2-900S	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	2	-1	-1
L2-1000S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L3-0S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1
L3-100S	-1	-1	1	1	-1	3	-1	3	-1	-1	-1	3	-1	-1
L3-200S	-1	-1	1	1	-1	2	-1	2	-1	-1	-1	2	-1	-1
L3-300S	-1	-1	1	1	-1	3	-1	3	-1	-1	-1	2	-1	-1
L3-400S	-1	-1	1	-1	-1	3	-1	2	-1	-1	-1	6	2	2
L3-500S	-1	2	3	3	2	6	-1	2	-1	-1	-1	6	-1	2
L3-600S	-1	-1	1	1	1	4	-1	1	-1	-1	-1	2	-1	1
L3-700S	-1	1	2	2	2	5	-1	2	-1	-1	-1	4	-1	1
L3-800S	-1	-1	1	1	-1	2	-1	1	-1	-1	-1	2	-1	1
L3-900S	-1	1	2	2	-1	5	-1	2	-1	-1	-1	4	2	3
L3-1000S	-1	1	-1	-1	-1	3	-1	2	-1	-1	-1	3	1	2
L4-0S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L4-100S	-1	1	2	2	1	4	-1	5	-1	-1	-1	3	-1	2
L4-100S-R	-1	1	2	2	1	4	-1	1	-1	-1	-1	3	1	2
L4-200S	-1	2	2	2	1	4	-1	2	-1	-1	-1	3	1	2
L4-300S	1	3	4	4	2	8	-1	4	-1	-1	-1	8	2	4
L4-400S	-1	-1	1	1	-1	3	-1	-1	-1	-1	-1	2	-1	-1
L4-700S	-1	-1	1	1	-1	4	-1	1	-1	-1	-1	2	-1	-1
L4-900S	-1	1	2	2	-1	6	-1	7	-1	-1	-1	8	-1	3
L4-1000S	-1	-1	-1	-1	-1	2	-1	1	-1	-1	-1	2	-1	-1
L5-0S	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1
L5-100S	-1	1	1	2	-1	3	-1	1	-1	-1	-1	2	-1	1
L5-200S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L5-300S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L5-400S	-1	1	1	1	-1	3	-1	-1	-1	-1	-1	2	-1	-1
L5-500S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L5-500S-R	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L5-600S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L5-700S	-1	-1	-1	-1	1	2	-1	-1	-1	-1	-1	2	-1	-1
L5-900S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1

	015 - LAR	016 - LB	017 - LB	018 - LB	019 - LB	020 - LA	021 - LPH	022 - LBA	023 - LAR	024 - LB	025 - LAR	026 - LBA	027 - LB	028 - ALK
L5-1000S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L6-0S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	1	-1	-1
L6-100S	-1	-1	-1	-1	-1	1	-1	1	-1	-1	-1	1	-1	1
L6-200S	-1	-1	1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	1
L6-300S	-1	-1	-1	-1	-1	3	-1	2	-1	-1	-1	3	-1	2
L6-400S	-1	-1	-1	-1	-1	2	-1	1	-1	-1	-1	2	-1	1
L6-500S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1
L6-600S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1
L6-700S	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1
L6-800S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L6-900S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L6-900S-R	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L6-1000S	-1	-1	-1	-1	-1	6	-1	1	-1	-1	-1	3	-1	-1
L7-0S	-1	-1	-1	-1	-1	3	-1	2	-1	-1	-1	2	-1	-1
L7-100S	-1	-1	-1	-1	-1	3	-1	1	-1	-1	-1	3	-1	2
L7-200S	-1	-1	-1	-1	-1	3	-1	-1	-1	-1	-1	-1	-1	1
L7-300S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L7-400S	-1	-1	1	1	-1	3	-1	-1	-1	-1	-1	3	-1	2
L7-500S	-1	-1	-1	-1	-1	4	-1	4	-1	-1	-1	3	-1	2
L7-600S	-1	1	1	1	-1	4	-1	1	-1	-1	-1	4	1	2
L7-700S	-1	-1	-1	-1	-1	3	-1	-1	-1	-1	-1	2	-1	1
L7-800S	-1	1	2	2	-1	4	-1	-1	-1	-1	-1	4	1	2
L7-900S	-1	-1	-1	1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1
L7-1000S	-1	1	1	1	-1	2	-1	-1	-1	-1	-1	-1	1	-1
L8-0S	-1	2	1	3	2	4	-1	5	-1	-1	-1	2	5	1
L8-100S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	1	1
L8-200S	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	-1	-1	1
L8-200S-R	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	2	-1	-1
L8-300S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1
L8-400S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L8-500S	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1
L8-600S	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	-1	1	-1	-1
L8-700S	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
L8-800S	-1	1	-1	-1	-1	4	-1	1	-1	-1	-1	3	1	2
L8-900S	1	1	2	2	-1	4	-1	3	-1	-1	-1	4	2	2
L8-1000S	-1	1	-1	-1	-1	3	-1	2	-1	-1	-1	3	1	2
L1-600S B	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

	015 - LAR	016 - LB	017 - LB	018 - LB	019 - LB	020 - LA	021 - LPH	022 - LBA	023 - LAR	024 - LB	025 - LAR	026 - LBA	027 - LB	028 - ALK

	029 - HB	030 - HB	031 - HB	032 - HB	033 - HB	034 - HB	035 - LAR	036 - LBA	037 - HB	038 - LBA	039 - LAR	040 - LPB	041 - LBA	042 - LPB
L1-0S	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1
L1-100S	-1	-1	-1	-1	-1	-1	-1	3	-1	4	-1	-1	3	-1
L1-200S	-1	-1	1	-1	-1	-1	-1	5	-1	6	1	-1	6	-1
L1-300S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L1-400S	-1	-1	-1	-1	-1	-1	-1	1	-1	2	-1	-1	2	-1
L1-400S-R	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	3	-1
L1-500S	-1	-1	-1	-1	-1	-1	-1	5	-1	6	1	-1	5	-1
L1-600S	-1	-1	-1	-1	-1	-1	-1	1	-1	4	-1	-1	4	-1
L1-700S	-1	1	-1	-1	-1	-1	-1	6	-1	6	2	-1	6	-1
L1-800S	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	-1	-1	2	-1
L1-900S	-1	-1	-1	-1	-1	-1	-1	3	-1	1	-1	-1	1	-1
L1-1000S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L2-0S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	-1	-1	4	-1
L2-100S	-1	-1	-1	-1	-1	-1	-1	3	-1	4	-1	-1	3	-1
L2-200S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	-1	-1	3	-1
L2-300S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	4	-1
L2-400S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	2	-1
L2-500S	-1	-1	-1	-1	-1	-1	-1	4	-1	4	-1	-1	4	-1
L2-600S	-1	-1	-1	-1	-1	-1	-1	3	-1	5	1	-1	4	-1
L2-700S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	1	-1
L2-800S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	1	-1
L2-800S-R	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	2	-1
L2-900S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	-1	-1	1	-1
L2-1000S	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	3	-1
L3-0S	-1	-1	1	-1	-1	-1	-1	2	-1	2	2	-1	2	-1
L3-100S	-1	1	-1	-1	-1	-1	-1	3	-1	3	2	-1	3	-1
L3-200S	-1	-1	-1	-1	-1	-1	-1	3	-1	-1	2	-1	2	-1
L3-300S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	2	-1	3	-1
L3-400S	2	-1	2	-1	-1	-1	-1	5	1	3	-1	-1	6	-1
L3-500S	2	3	-1	2	1	-1	-1	6	-1	7	3	-1	7	-1
L3-600S	-1	1	-1	-1	-1	-1	-1	4	-1	5	2	-1	5	-1
L3-700S	-1	1	-1	1	-1	-1	-1	-1	-1	6	2	-1	5	-1
L3-800S	-1	-1	-1	-1	-1	-1	-1	4	-1	3	1	-1	2	-1
L3-900S	-1	-1	1	-1	-1	-1	-1	7	1	5	1	-1	5	-1
L3-1000S	-1	-1	1	-1	-1	-1	-1	6	-1	7	1	-1	6	-1
L4-0S	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	3	-1
L4-100S	-1	1	-1	-1	-1	-1	-1	5	-1	4	1	-1	3	-1
L4-100S-R	-1	1	-1	-1	-1	-1	-1	5	-1	4	1	-1	3	-1
L4-200S	-1	1	1	-1	-1	-1	-1	4	-1	3	1	-1	6	-1
L4-300S	1	2	2	-1	-1	1	-1	11	-1	9	2	-1	8	-1
L4-400S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	1	-1	3	-1
L4-700S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	1	-1	3	-1
L4-900S	-1	1	1	-1	-1	-1	-1	10	-1	11	1	-1	11	-1
L4-1000S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	-1	-1	3	-1
L5-0S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	1	-1
L5-100S	-1	1	-1	-1	-1	-1	-1	4	-1	3	-1	-1	4	-1
L5-200S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L5-300S	-1	-1	-1	-1	-1	-1	-1	3	-1	1	-1	-1	3	-1
L5-400S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	1	-1	3	-1
L5-500S	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	-1	-1	2	-1
L5-500S-R	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	2	-1
L5-600S	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	-1	-1	2	-1
L5-700S	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	3	-1
L5-900S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1

	029 - HB	030 - HB	031 - HB	032 - HB	033 - HB	034 - HB	035 - LAR	036 - LBA	037 - HB	038 - LBA	039 - LAR	040 - LPB	041 - LBA	042 - LPB
L5-1000S	-1	-1	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	1	-1
L6-0S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L6-100S	-1	-1	-1	-1	-1	-1	-1	3	-1	-1	-1	-1	2	-1
L6-200S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	2	-1
L6-300S	1	-1	1	-1	-1	-1	-1	5	-1	3	-1	-1	6	-1
L6-400S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	1	-1
L6-500S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	3	-1
L6-600S	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	-1	-1	1	-1
L6-700S	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2	-1
L6-800S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	-1
L6-900S	-1	-1	-1	-1	-1	-1	-1	2	-1	-1	-1	-1	2	-1
L6-900S-R	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L6-1000S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	3	-1
L7-0S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L7-100S	-1	-1	-1	-1	-1	-1	-1	4	-1	3	-1	-1	5	-1
L7-200S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	3	-1
L7-300S	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	3	-1
L7-400S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	5	-1
L7-500S	-1	-1	-1	-1	-1	-1	-1	5	-1	5	-1	-1	3	-1
L7-600S	-1	-1	1	-1	-1	-1	-1	5	-1	4	1	-1	3	-1
L7-700S	-1	-1	-1	-1	-1	-1	-1	3	-1	2	-1	-1	4	-1
L7-800S	-1	-1	1	-1	-1	-1	-1	4	-1	4	-1	-1	6	-1
L7-900S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L7-1000S	-1	-1	-1	-1	-1	-1	-1	2	-1	1	-1	-1	1	-1
L8-0S	-1	-1	2	-1	-1	-1	-1	2	2	2	-1	-1	1	-1
L8-100S	-1	-1	1	-1	-1	-1	-1	3	1	2	-1	-1	3	-1
L8-200S	-1	-1	-1	-1	-1	-1	-1	3	-1	3	-1	-1	2	-1
L8-200S-R	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	3	-1
L8-300S	-1	-1	-1	-1	-1	-1	-1	2	-1	3	-1	-1	2	-1
L8-400S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	-1
L8-500S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	2	-1
L8-600S	-1	-1	-1	-1	-1	-1	-1	2	-1	2	-1	-1	3	-1
L8-700S	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	-1	-1
L8-800S	1	-1	2	-1	-1	-1	-1	4	1	7	-1	-1	7	-1
L8-900S	-1	-1	2	-1	-1	-1	-1	5	1	7	1	-1	7	-1
L8-1000S	-1	-1	1	-1	-1	-1	-1	4	-1	3	-1	-1	5	-1
L1-600S B	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-1	-1	-1	-1

	029 - HB	030 - HB	031 - HB	032 - HB	033 - HB	034 - HB	035 - LAR	036 - LBA	037 - HB	038 - LBA	039 - LAR	040 - LPB	041 - LBA	042 - LPB

	043 - HB	044 - HB	045 - LA	046 - LPR	047 - LBA	048 - HB	049 -HB	050 - LBA	051 - LBI	052 - LPB	053 - LPB	054 - HB	055 - LPB	056 - LBI
L1-0S	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
L1-100S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L1-200S	-1	-1	8	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L1-300S	-1	-1	3	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L1-400S	-1	-1	3	-1	1	-1	-1	2	-1	-1	-1	-1	-1	-1
L1-400S-R	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L1-500S	-1	-1	8	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L1-600S	-1	-1	5	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L1-700S	-1	-1	9	-1	5	1	-1	5	-1	-1	-1	-1	-1	-1
L1-800S	-1	-1	3	-1	1	-1	-1	2	-1	-1	-1	-1	-1	-1
L1-900S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L1-1000S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L2-0S	-1	-1	4	-1	2	-1	-1	3	-1	-1	-1	-1	-1	-1
L2-100S	-1	-1	4	-1	2	-1	-1	3	-1	-1	-1	-1	-1	-1
L2-200S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L2-300S	-1	-1	6	-1	3	-1	-1	4	-1	-1	-1	-1	-1	-1
L2-400S	-1	-1	5	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L2-500S	-1	-1	5	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L2-600S	-1	-1	6	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L2-700S	-1	-1	2	-1	1	-1	-1	2	-1	-1	-1	-1	-1	-1
L2-800S	-1	-1	2	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L2-800S-R	-1	-1	3	-1	2	-1	-1	3	-1	-1	-1	-1	-1	-1
L2-900S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L2-1000S	-1	-1	4	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L3-0S	-1	-1	2	-1	1	-1	-1	2	-1	-1	-1	-1	-1	-1
L3-100S	-1	-1	4	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L3-200S	-1	-1	3	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L3-300S	-1	-1	5	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L3-400S	-1	-1	7	-1	7	-1	-1	7	-1	-1	-1	-1	-1	-1
L3-500S	-1	-1	11	-1	7	-1	-1	7	-1	-1	-1	-1	-1	-1
L3-600S	-1	-1	7	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L3-700S	-1	-1	8	-1	5	1	-1	5	-1	-1	-1	-1	-1	-1
L3-800S	-1	-1	4	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L3-900S	-1	-1	11	-1	6	-1	-1	6	-1	-1	-1	-1	-1	-1
L3-1000S	-1	-1	7	-1	5	-1	-1	5	-1	-1	-1	-1	-1	-1
L4-0S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L4-100S	-1	-1	8	-1	4	-1	-1	5	-1	-1	-1	-1	-1	-1
L4-100S-R	-1	-1	8	-1	4	-1	-1	5	-1	-1	-1	-1	-1	-1
L4-200S	-1	-1	7	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L4-300S	-1	-1	19	-1	14	1	1	14	-1	-1	-1	-1	-1	-1
L4-400S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L4-700S	-1	-1	5	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L4-900S	-1	-1	17	-1	14	-1	-1	16	-1	-1	-1	-1	-1	-1
L4-1000S	-1	-1	4	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L5-0S	-1	-1	2	-1	1	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-100S	-1	-1	7	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L5-200S	-1	-1	2	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-300S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-400S	-1	-1	4	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L5-500S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-500S-R	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-600S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-700S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L5-900S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1

	043 - HB	044 - HB	045 - LA	046 - LPH	047 - LBA	048 - HB	049 -HB	050 - LBA	051 - LBI	052 - LPB	053 - LPB	054 - HB	055 - LPB	056 - LBI
L5-1000S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-0S	-1	-1	2	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-100S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-200S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-300S	-1	-1	9	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L6-400S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-500S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-600S	-1	-1	3	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L6-700S	-1	-1	2	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L6-800S	-1	-1	2	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L6-900S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-900S-R	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L6-1000S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L7-0S	-1	-1	2	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L7-100S	-1	-1	5	-1	4	-1	-1	5	-1	-1	-1	-1	-1	-1
L7-200S	-1	-1	3	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L7-300S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L7-400S	-1	-1	6	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L7-500S	-1	-1	6	-1	4	-1	-1	5	-1	-1	-1	-1	-1	-1
L7-600S	-1	-1	7	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L7-700S	-1	-1	5	-1	2	-1	-1	3	-1	-1	-1	-1	-1	-1
L7-800S	-1	-1	8	-1	5	-1	-1	5	-1	-1	-1	-1	-1	-1
L7-900S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L7-1000S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-0S	-1	-1	6	-1	2	-1	-1	3	-1	-1	-1	-1	-1	-1
L8-100S	-1	-1	4	-1	3	-1	-1	3	-1	-1	-1	-1	-1	-1
L8-200S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-200S-R	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-300S	-1	-1	4	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-400S	-1	-1	3	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-500S	-1	-1	2	-1	1	-1	-1	1	-1	-1	-1	-1	-1	-1
L8-600S	-1	-1	6	-1	2	-1	-1	2	-1	-1	-1	-1	-1	-1
L8-700S	-1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
L8-800S	-1	-1	8	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L8-900S	-1	-1	9	-1	5	-1	-1	5	-1	-1	-1	-1	-1	-1
L8-1000S	-1	-1	6	-1	4	-1	-1	4	-1	-1	-1	-1	-1	-1
L1-600S B	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	1	-1	-1	-1	-1	1	-1	-1	-1	-1	-1	-1
LMB-QA	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

	043 - HB	044 - HB	045 - LA	046 - LPH	047 - LBA	048 - HB	049 -HB	050 - LBA	051 - LBI	052 - LPB	053 - LPB	054 - HB	055 - LPB	056 - LBI

	057 - ALK	058 - LPB	059 - LPB	060 - LPH	061 - LBI	062 - LBA	063 - LPH	064 - LBA	065 - HPB	066 - LBA	067 - LBI	068 - HPB	069 - LA	070 - HPB
L1-0S	-1	-1	-1	-1	-1	1	-1	1	-1	-1	-1	-1	2	-1
L1-100S	-1	-1	-1	-1	-1	3	1	3	-1	-1	-1	-1	4	-1
L1-200S	-1	-1	-1	-1	1	6	3	7	1	9	1	-1	12	2
L1-300S	-1	-1	-1	-1	-1	2	-1	2	-1	3	-1	-1	4	-1
L1-400S	-1	-1	-1	-1	-1	2	-1	2	-1	1	-1	-1	3	-1
L1-400S-R	-1	-1	-1	-1	-1	3	1	3	-1	3	-1	-1	4	-1
L1-500S	-1	-1	-1	-1	1	4	2	5	1	6	-1	-1	7	1
L1-600S	-1	-1	-1	-1	-1	3	1	3	-1	-1	-1	-1	5	1
L1-700S	-1	-1	-1	-1	1	5	3	6	1	8	-1	-1	7	1
L1-800S	-1	-1	-1	-1	-1	2	1	2	-1	-1	-1	-1	3	-1
L1-900S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	3	-1
L1-1000S	-1	-1	-1	-1	-1	2	1	3	-1	4	-1	-1	3	-1
L2-0S	-1	-1	-1	-1	-1	4	1	4	1	5	-1	-1	6	1
L2-100S	-1	-1	-1	-1	-1	4	2	4	1	4	-1	-1	6	1
L2-200S	-1	-1	-1	-1	-1	3	2	4	1	4	-1	-1	5	1
L2-300S	-1	-1	-1	-1	1	5	2	5	-1	6	1	-1	8	1
L2-400S	-1	-1	-1	-1	-1	4	2	4	1	6	-1	-1	6	1
L2-500S	2	-1	-1	-1	-1	4	2	5	-1	6	-1	-1	6	1
L2-600S	-1	-1	-1	-1	1	3	2	5	1	5	-1	-1	6	1
L2-700S	-1	-1	-1	-1	-1	2	1	3	-1	2	-1	-1	3	-1
L2-800S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	5	-1
L2-800S-R	-1	-1	-1	-1	-1	3	1	4	-1	4	-1	-1	4	-1
L2-900S	-1	-1	-1	-1	-1	3	1	3	-1	3	-1	-1	5	-1
L2-1000S	-1	-1	-1	-1	-1	3	1	4	-1	4	-1	-1	5	1
L3-0S	-1	-1	-1	-1	-1	2	2	2	-1	3	-1	-1	4	-1
L3-100S	1	-1	-1	-1	-1	4	2	-1	1	3	-1	-1	5	1
L3-200S	1	-1	-1	-1	-1	3	2	3	-1	2	-1	-1	4	1
L3-300S	-1	-1	-1	-1	-1	3	2	4	1	3	-1	-1	6	1
L3-400S	3	-1	-1	-1	1	7	2	8	1	8	1	-1	8	1
L3-500S	2	-1	-1	-1	1	6	4	6	2	8	1	1	10	2
L3-600S	-1	-1	-1	-1	1	4	2	5	1	6	-1	-1	8	1
L3-700S	1	-1	-1	-1	1	5	3	3	1	3	1	1	8	1
L3-800S	1	-1	-1	-1	-1	4	2	4	-1	3	-1	-1	6	-1
L3-900S	1	-1	-1	-1	2	8	3	9	1	12	2	1	15	2
L3-1000S	-1	-1	-1	-1	1	7	3	8	-1	8	1	-1	9	2
L4-0S	-1	-1	-1	-1	1	3	1	3	-1	4	-1	-1	6	-1
L4-100S	-1	-1	-1	1	1	6	5	8	1	9	1	1	10	2
L4-100S-R	-1	-1	-1	-1	1	7	4	8	2	10	1	1	12	2
L4-200S	-1	-1	-1	-1	1	6	4	7	1	8	1	1	9	2
L4-300S	3	-1	-1	1	3	17	8	19	2	21	2	2	22	4
L4-400S	-1	-1	-1	-1	-1	3	2	3	-1	2	-1	-1	4	1
L4-700S	-1	-1	-1	-1	-1	4	2	4	-1	5	-1	-1	6	1
L4-900S	4	-1	-1	-1	2	12	3	15	1	16	2	1	18	2
L4-1000S	-1	-1	-1	-1	-1	4	2	4	-1	5	-1	-1	5	1
L5-0S	-1	-1	-1	-1	-1	2	1	2	-1	2	-1	-1	4	-1
L5-100S	-1	-1	-1	-1	1	6	2	6	1	9	1	-1	11	2
L5-200S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	5	-1
L5-300S	-1	-1	-1	-1	-1	4	2	4	-1	4	-1	-1	5	1
L5-400S	-1	-1	-1	-1	-1	3	2	3	-1	4	-1	-1	5	1
L5-500S	-1	-1	-1	-1	-1	3	1	3	-1	2	-1	-1	4	1
L5-500S-R	-1	-1	-1	-1	-1	2	1	3	1	3	-1	-1	4	1
L5-600S	-1	-1	-1	-1	-1	2	1	3	-1	3	-1	-1	4	-1
L5-700S	-1	-1	-1	-1	-1	3	2	3	-1	-1	-1	-1	4	-1
L5-900S	-1	-1	-1	-1	-1	2	2	2	-1	-1	-1	-1	3	-1

	057 - ALK	058 - LPB	059 - LPB	060 - LPH	061 - LBI	062 - LBA	063 - LPH	064 - LBA	065 - HPB	066 - LBA	067 - LBI	068 - HPB	069 - LA	070 - HPB
L5-1000S	-1	-1	-1	-1	-1	2	1	2	-1	1	-1	-1	4	-1
L6-0S	-1	-1	-1	-1	-1	2	1	3	-1	3	-1	-1	3	-1
L6-100S	-1	-1	-1	-1	-1	3	1	3	-1	3	-1	-1	4	-1
L6-200S	-1	-1	-1	-1	-1	4	2	4	1	3	-1	-1	6	1
L6-300S	-1	-1	-1	1	1	6	3	7	1	7	1	-1	9	2
L6-400S	-1	-1	-1	-1	-1	3	2	3	-1	5	-1	-1	5	-1
L6-500S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	4	-1
L6-600S	-1	-1	-1	-1	-1	2	1	2	-1	2	-1	-1	3	-1
L6-700S	-1	-1	-1	-1	-1	2	-1	2	-1	3	-1	-1	4	-1
L6-800S	-1	-1	-1	-1	-1	2	1	3	-1	3	-1	-1	2	-1
L6-900S	-1	-1	-1	-1	-1	3	2	3	-1	3	-1	-1	4	1
L6-900S-R	-1	-1	-1	-1	-1	2	2	3	-1	3	-1	-1	4	1
L6-1000S	-1	-1	-1	-1	-1	3	2	3	-1	2	-1	-1	5	1
L7-0S	-1	-1	-1	-1	-1	2	1	3	-1	3	-1	-1	3	-1
L7-100S	-1	-1	-1	-1	1	5	2	6	-1	7	1	-1	8	1
L7-200S	-1	-1	-1	-1	-1	4	2	4	-1	4	-1	-1	5	-1
L7-300S	-1	-1	-1	-1	-1	3	1	3	-1	3	-1	-1	4	-1
L7-400S	-1	-1	-1	-1	1	5	2	5	-1	5	1	-1	7	1
L7-500S	2	-1	-1	-1	1	5	2	6	1	4	-1	-1	8	1
L7-600S	-1	-1	-1	-1	1	6	3	6	1	7	1	-1	7	2
L7-700S	-1	-1	-1	-1	-1	4	2	5	-1	5	-1	-1	5	1
L7-800S	-1	-1	-1	-1	1	7	3	8	1	8	1	-1	10	2
L7-900S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	5	-1
L7-1000S	-1	-1	-1	-1	-1	3	1	3	-1	-1	-1	-1	6	1
L8-0S	-1	-1	-1	-1	-1	3	1	4	1	2	1	-1	7	1
L8-100S	-1	-1	-1	-1	-1	4	2	5	1	5	-1	-1	5	1
L8-200S	-1	-1	-1	-1	-1	4	1	4	-1	4	-1	-1	4	1
L8-200S-R	-1	-1	-1	-1	-1	4	1	4	-1	4	-1	-1	6	-1
L8-300S	-1	-1	-1	-1	-1	4	-1	4	1	5	-1	-1	7	1
L8-400S	-1	-1	-1	-1	-1	3	1	3	-1	3	-1	-1	4	-1
L8-500S	-1	-1	-1	-1	-1	3	1	3	-1	4	-1	-1	7	-1
L8-600S	-1	-1	-1	-1	1	4	-1	4	-1	5	1	-1	12	1
L8-700S	-1	-1	-1	-1	-1	2	1	2	-1	2	-1	-1	2	-1
L8-800S	-1	-1	-1	-1	1	6	3	7	1	9	1	1	11	2
L8-900S	-1	-1	-1	-1	2	8	3	9	1	10	1	1	16	2
L8-1000S	-1	-1	-1	-1	1	5	3	5	1	6	1	1	8	1
L1-600S B	-1	-1	-1	-1	-1	2	1	2	-1	1	-1	-1	2	-1
LMB-QA	-1	-1	-1	-1	-1	2	-1	2	-1	1	-1	-1	2	-1
LMB-QA	-1	-1	-1	-1	-1	2	-1	2	-1	-1	-1	-1	2	-1
LMB-QA	-1	-1	-1	-1	-1	3	-1	2	-1	2	-1	-1	3	-1
LMB-QA	-1	-1	-1	-1	-1	2	-1	2	-1	1	-1	-1	2	-1

	057 - ALK	058 - LPB	059 - LPB	060 - LPH	061 - LBI	062 - LBA	063 - LPH	064 - LBA	065 - HPB	066 - LBA	067 - LBI	068 - HPB	069 - LA	070 - HPB

	071 - HPB	072 - HPB	073 - HBA	074 - HBA	075 - HPB	076 - LPH	077 - MAR	078 - ALK	079 - LBI	080 - LPH	081 - MAR	082 - LPH	083 - HBA	084 - HBA
L1-0S	-1	-1	1	2	-1	-1	-1	-1	-1	-1	-1	1	3	1
L1-100S	-1	-1	3	4	-1	-1	-1	2	-1	1	1	1	8	1
L1-200S	2	2	6	9	-1	1	1	4	-1	1	2	2	24	2
L1-300S	-1	-1	2	2	-1	-1	-1	1	-1	-1	-1	1	5	1
L1-400S	-1	-1	2	2	-1	-1	-1	1	-1	-1	-1	1	5	1
L1-400S-R	-1	-1	3	-1	-1	-1	-1	1	-1	-1	1	1	6	1
L1-500S	2	1	4	5	2	-1	-1	2	-1	1	2	2	11	1
L1-600S	1	1	3	3	1	-1	-1	1	-1	-1	2	1	7	1
L1-700S	2	2	5	5	2	-1	-1	2	-1	1	2	2	12	1
L1-800S	-1	-1	-1	2	-1	-1	-1	1	-1	-1	1	1	3	-1
L1-900S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	5	1
L1-1000S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	5	1
L2-0S	1	1	4	5	1	-1	-1	2	-1	1	1	1	11	1
L2-100S	1	1	3	4	1	-1	-1	2	-1	1	2	1	8	1
L2-200S	1	1	3	4	-1	-1	-1	1	-1	1	2	1	6	1
L2-300S	1	1	5	6	1	1	1	2	-1	1	2	2	12	2
L2-400S	1	1	4	5	1	-1	-1	2	-1	1	2	2	8	1
L2-500S	1	1	4	5	1	1	-1	2	-1	1	2	1	8	1
L2-600S	1	1	4	4	1	-1	-1	2	-1	1	2	1	7	1
L2-700S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	5	1
L2-800S	-1	-1	2	4	-1	-1	-1	1	-1	-1	-1	1	6	1
L2-800S-R	-1	-1	3	3	-1	-1	-1	1	-1	-1	1	1	8	1
L2-900S	-1	-1	3	-1	-1	-1	-1	2	-1	-1	1	1	8	1
L2-1000S	1	1	3	3	1	-1	-1	2	-1	1	1	1	7	1
L3-0S	-1	-1	2	3	-1	-1	-1	1	-1	-1	-1	1	5	1
L3-100S	2	2	3	4	2	-1	-1	2	-1	-1	2	1	8	1
L3-200S	1	1	3	4	2	-1	-1	1	-1	-1	2	1	8	1
L3-300S	1	1	3	3	2	-1	-1	2	-1	1	2	1	10	1
L3-400S	1	1	5	7	1	1	1	4	-1	2	2	2	12	1
L3-500S	3	2	5	6	3	-1	1	3	-1	1	3	1	14	1
L3-600S	1	2	5	5	1	-1	-1	2	-1	1	2	1	10	1
L3-700S	2	2	5	5	2	-1	-1	2	-1	1	2	2	11	1
L3-800S	1	1	3	4	1	-1	-1	2	-1	1	2	1	11	1
L3-900S	2	2	9	12	2	2	2	4	-1	2	3	2	14	2
L3-1000S	2	2	7	8	-1	1	1	3	-1	2	2	2	14	2
L4-0S	-1	-1	4	4	-1	1	-1	2	-1	1	1	1	9	1
L4-100S	3	2	6	8	-1	1	1	3	-1	2	3	2	18	2
L4-100S-R	3	2	7	8	-1	2	1	3	-1	2	3	2	19	2
L4-200S	3	2	6	8	-1	2	1	3	-1	2	4	2	14	2
L4-300S	4	4	16	20	-1	3	3	6	1	3	4	3	44	3
L4-400S	1	1	3	4	1	-1	-1	1	-1	-1	1	1	8	1
L4-700S	1	1	4	4	1	-1	-1	2	-1	1	2	1	8	1
L4-900S	2	2	9	13	2	2	2	5	-1	2	2	2	32	2
L4-1000S	1	1	4	5	1	-1	-1	2	-1	1	2	2	8	1
L5-0S	-1	-1	2	3	-1	-1	-1	1	-1	1	1	1	5	1
L5-100S	2	2	6	8	-1	1	1	3	-1	1	2	2	17	2
L5-200S	-1	-1	3	3	-1	-1	-1	1	-1	-1	1	1	7	1
L5-300S	1	-1	3	4	-1	-1	-1	2	-1	1	1	1	7	1
L5-400S	1	1	3	3	1	-1	-1	1	-1	-1	1	1	6	1
L5-500S	1	1	2	3	1	-1	-1	1	-1	-1	1	1	5	1
L5-500S-R	1	1	2	2	1	-1	-1	-1	-1	-1	1	1	5	1
L5-600S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	4	1
L5-700S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	5	1
L5-900S	-1	-1	2	3	-1	-1	-1	1	-1	-1	-1	1	3	1

	071 - HPB	072 - HPB	073 - HBA	074 - HBA	075 - HPB	076 - LPH	077 - MAR	078 - ALK	079 - LBI	080 - LPH	081 - MAR	082 - LPH	083 - HBA	084 - HBA
L5-1000S	-1	-1	2	-1	-1	-1	-1	1	-1	-1	-1	1	5	1
L6-0S	-1	-1	2	1	-1	-1	-1	1	-1	-1	-1	1	6	1
L6-100S	-1	-1	3	4	-1	-1	-1	1	-1	1	1	1	5	1
L6-200S	1	1	4	4	1	-1	-1	-1	-1	1	2	1	9	1
L6-300S	2	2	6	1	1	1	1	3	-1	2	3	2	17	1
L6-400S	-1	-1	3	4	-1	1	-1	2	-1	1	1	1	8	1
L6-500S	-1	-1	3	2	-1	-1	-1	1	-1	1	-1	1	6	1
L6-600S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	3	1
L6-700S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	2	1
L6-800S	-1	-1	2	3	-1	-1	-1	-1	-1	-1	-1	1	5	1
L6-900S	1	1	3	3	1	-1	-1	1	-1	-1	2	-1	6	1
L6-900S-R	1	1	3	-1	1	-1	-1	1	-1	-1	2	1	5	1
L6-1000S	1	1	3	4	1	-1	-1	1	-1	-1	1	1	8	-1
L7-0S	-1	-1	2	3	-1	-1	-1	1	-1	-1	1	1	5	1
L7-100S	1	1	5	6	-1	1	-1	2	-1	1	1	2	13	1
L7-200S	-1	-1	4	5	-1	-1	-1	2	-1	1	2	1	9	1
L7-300S	-1	-1	3	3	-1	-1	-1	1	-1	1	1	1	6	1
L7-400S	1	1	5	6	1	1	-1	2	-1	1	2	2	13	1
L7-500S	1	1	4	6	-1	1	-1	3	-1	2	2	2	10	2
L7-600S	2	2	6	7	-1	1	1	3	-1	2	2	2	8	2
L7-700S	1	1	3	5	1	1	-1	2	-1	1	2	1	10	1
L7-800S	2	2	8	9	2	1	1	3	-1	2	2	2	15	2
L7-900S	-1	-1	3	1	-1	-1	-1	1	-1	-1	1	1	7	1
L7-1000S	1	1	3	4	-1	-1	-1	1	-1	-1	1	1	8	1
L8-0S	1	1	3	4	1	-1	-1	2	-1	-1	2	1	9	1
L8-100S	1	1	4	5	-1	1	-1	2	-1	1	1	2	9	1
L8-200S	1	1	3	4	-1	-1	-1	2	-1	1	2	1	6	1
L8-200S-R	1	-1	4	5	-1	-1	-1	2	-1	1	2	2	6	1
L8-300S	1	-1	4	-1	-1	-1	-1	2	-1	1	1	1	13	1
L8-400S	-1	-1	3	3	-1	-1	-1	1	-1	-1	1	1	5	1
L8-500S	-1	-1	4	3	-1	-1	-1	-1	-1	-1	-1	1	3	1
L8-600S	-1	-1	5	6	-1	-1	-1	2	-1	1	1	1	15	1
L8-700S	-1	-1	2	2	-1	-1	-1	-1	-1	-1	-1	1	3	1
L8-800S	1	1	7	9	1	2	1	3	-1	2	2	2	15	2
L8-900S	2	2	10	12	-1	2	2	3	-1	2	2	2	29	2
L8-1000S	2	1	5	7	-1	1	1	2	-1	2	2	2	15	2
L1-600S B	-1	-1	2	2	-1	-1	-1	-1	-1	-1	1	1	-1	-1
LMB-QA	-1	-1	1	1	-1	-1	-1	-1	-1	-1	-1	1	2	1
LMB-QA	-1	-1	2	2	-1	-1	-1	-1	-1	-1	-1	1	-1	1
LMB-QA	-1	-1	2	2	-1	-1	-1	-1	-1	-1	-1	1	-1	1
LMB-QA	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	1	2	1

	071 - HPB	072 - HPB	073 - HBA	074 - HBA	075 - HPB	076 - LPH	077 - MAR	078 - ALK	079 - LBI	080 - LPH	081 - MAR	082 - LPH	083 - HBA	084 - HBA

True North Mineral Laboratories
Kevin Cool
-1=Reporting Limit of 1pg/g (ppt=parts per trillion)

SOIL GAS HYDROCARBONS
(SGH) by GC/MS
CLEAVER PROJECT SITE

Activation Laboratories Ltd.
Date: August 24, 2011
R=Replicate Sample

	085 - LPH	086 - LBI	087 - MAR	088 - HBA	089 - THI	090 - HPB	091 - LBI	092 - LPH	093 - LA	094 - LBI	095 - MAR	096 - LPH	097 - HBA	098 - THI
L1-0S	3	-1	1	2	-1	-1	1	-1	6	1	1	1	3	1
L1-100S	10	-1	2	9	-1	1	1	2	19	2	2	3	12	1
L1-200S	27	1	2	29	-1	2	2	3	68	3	2	5	40	3
L1-300S	5	-1	2	4	-1	1	1	1	11	1	2	2	7	-1
L1-400S	6	-1	2	5	-1	1	1	1	10	1	1	1	6	1
L1-400S-R	6	-1	2	6	-1	1	1	1	13	1	1	2	8	-1
L1-500S	12	1	3	12	-1	2	1	2	29	2	2	3	17	2
L1-600S	8	-1	2	8	-1	1	1	1	17	2	1	2	10	1
L1-700S	12	1	3	13	-1	2	2	2	31	2	2	3	18	2
L1-800S	6	-1	1	5	-1	1	1	1	9	1	1	2	5	1
L1-900S	5	-1	1	6	-1	1	1	1	15	1	1	2	9	1
L1-1000S	5	-1	1	5	-1	1	1	1	12	1	1	2	7	1
L2-0S	11	-1	1	10	-1	1	1	2	21	2	1	2	12	1
L2-100S	10	-1	2	10	-1	1	1	2	20	2	1	2	12	1
L2-200S	9	-1	1	6	-1	2	1	2	17	2	1	2	10	1
L2-300S	13	1	2	13	-1	2	2	2	33	2	1	4	18	2
L2-400S	8	1	2	9	-1	1	1	2	22	2	1	3	13	1
L2-500S	8	-1	1	10	-1	1	1	2	30	2	1	3	17	1
L2-600S	8	-1	2	10	-1	2	1	2	21	2	1	3	11	1
L2-700S	4	-1	1	4	-1	1	1	1	10	1	1	2	6	1
L2-800S	5	-1	1	4	-1	1	1	1	12	1	1	2	8	1
L2-800S-R	7	-1	1	7	-1	1	1	1	18	2	1	2	11	1
L2-900S	8	-1	2	8	-1	-1	1	2	22	2	2	2	12	2
L2-1000S	6	-1	1	7	-1	1	2	2	23	2	1	2	14	1
L3-0S	6	-1	2	5	-1	1	1	1	10	1	1	2	6	1
L3-100S	10	1	2	9	-1	1	1	2	19	2	1	2	10	1
L3-200S	7	-1	2	8	-1	1	1	1	12	1	1	2	7	1
L3-300S	11	-1	2	11	-1	2	1	2	22	2	2	2	12	2
L3-400S	6	1	2	15	-1	2	2	2	41	2	2	3	24	2
L3-500S	16	1	4	16	-1	2	2	2	37	2	2	3	19	2
L3-600S	12	1	2	13	-1	2	2	2	22	2	1	3	13	1
L3-700S	12	1	3	13	-1	2	2	2	26	2	1	3	15	2
L3-800S	8	-1	2	9	-1	2	1	2	21	2	3	3	13	1
L3-900S	33	2	2	31	-1	2	3	3	78	4	2	5	43	2
L3-1000S	18	1	2	18	-1	2	2	3	43	2	2	5	26	2
L4-0S	8	-1	1	8	-1	1	1	1	21	2	-1	2	12	1
L4-100S	17	1	2	18	-1	2	2	4	47	3	2	7	22	2
L4-100S-R	21	1	2	19	-1	2	2	4	46	3	2	6	23	2
L4-200S	11	1	4	15	-1	2	2	4	35	2	2	6	19	2
L4-300S	47	2	4	45	-1	3	4	7	115	4	2	11	58	3
L4-400S	8	-1	2	6	-1	1	1	1	16	2	1	2	9	1
L4-700S	8	1	2	8	-1	2	1	2	20	2	1	3	11	-1
L4-900S	35	2	2	34	-1	2	3	3	98	4	2	4	50	2
L4-1000S	9	-1	2	11	-1	2	1	2	20	2	1	3	11	1
L5-0S	5	-1	1	6	-1	1	1	1	11	1	1	2	7	1
L5-100S	24	1	2	22	-1	2	2	2	47	3	2	3	25	2
L5-200S	8	-1	1	7	-1	1	1	1	13	1	1	2	7	1
L5-300S	7	-1	1	5	-1	1	1	2	19	2	1	3	11	1
L5-400S	8	-1	2	7	-1	1	1	2	14	2	1	2	6	1
L5-500S	5	-1	2	4	-1	1	1	1	10	1	1	2	5	1
L5-500S-R	6	-1	2	5	-1	1	1	1	11	2	1	2	5	1
L5-600S	5	-1	2	5	-1	1	1	1	9	1	1	2	5	1
L5-700S	7	-1	2	5	-1	1	1	2	10	1	1	2	5	1
L5-900S	5	-1	1	4	-1	1	1	1	8	1	1	2	5	1

True North Mineral Laboratories
Kevin Cool
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SOIL GAS HYDROCARBONS
(SGH) by GC/MS
CLEAVER PROJECT SITE

Activation Laboratories Ltd.
Date: August 24, 2011
R=Replicate Sample

	085 - LPH	086 - LBI	087 - MAR	088 - HBA	089 - THI	090 - HPB	091 - LBI	092 - LPH	093 - LA	094 - LBI	095 - MAR	096 - LPH	097 - HBA	098 - THI
L5-1000S	6	-1	2	4	-1	1	1	1	10	1	1	2	5	1
L6-0S	6	-1	1	5	-1	1	1	1	12	1	1	2	7	1
L6-100S	5	-1	1	4	-1	1	1	2	11	1	1	2	7	1
L6-200S	9	-1	1	8	-1	2	1	2	18	2	1	3	15	2
L6-300S	16	1	2	18	-1	2	2	3	40	2	2	5	19	1
L6-400S	8	-1	2	7	-1	1	1	2	17	2	1	3	9	1
L6-500S	7	-1	1	7	-1	1	1	1	17	2	1	2	8	1
L6-600S	5	-1	1	4	-1	1	1	1	12	2	2	2	6	1
L6-700S	5	-1	1	6	-1	1	1	1	8	1	1	2	6	1
L6-800S	4	-1	1	4	-1	1	-1	1	9	1	1	2	5	1
L6-900S	7	-1	1	8	-1	1	1	1	13	1	1	2	7	1
L6-900S-R	7	-1	1	5	-1	1	1	2	14	2	1	2	7	1
L6-1000S	9	-1	1	8	-1	1	1	2	14	2	1	2	8	1
L7-0S	3	-1	2	4	-1	1	1	1	12	2	3	2	7	2
L7-100S	14	-1	1	13	-1	2	2	2	40	2	2	3	22	2
L7-200S	8	-1	1	8	-1	1	1	2	23	2	1	3	14	1
L7-300S	7	-1	1	6	-1	1	1	2	16	2	1	2	10	1
L7-400S	12	1	1	13	-1	2	2	2	31	2	1	4	19	2
L7-500S	10	1	2	12	-1	2	2	2	33	2	2	3	18	1
L7-600S	18	1	2	16	-1	2	2	3	34	2	2	4	21	2
L7-700S	12	-1	2	11	-1	2	2	2	28	2	1	3	17	2
L7-800S	20	1	2	17	-1	2	2	3	45	3	2	5	25	2
L7-900S	9	-1	3	7	-1	2	1	1	15	2	1	2	9	-1
L7-1000S	7	-1	2	7	-1	2	1	1	17	2	2	2	9	2
L8-0S	8	-1	4	9	-1	2	1	1	19	2	2	2	11	3
L8-100S	13	-1	2	11	-1	2	1	2	21	2	2	3	12	1
L8-200S	7	-1	2	6	-1	2	1	2	17	2	1	3	10	1
L8-200S-R	8	-1	1	7	-1	1	1	2	17	2	1	2	11	1
L8-300S	13	-1	2	14	-1	1	2	2	43	3	2	2	24	2
L8-400S	7	-1	4	6	-1	2	1	1	14	2	1	2	11	2
L8-500S	8	-1	2	6	-1	1	1	1	9	1	2	2	6	1
L8-600S	15	-1	3	16	-1	2	2	2	40	3	4	3	22	3
L8-700S	3	-1	1	2	-1	1	-1	1	6	1	1	2	5	1
L8-800S	22	1	3	17	-1	2	2	3	48	3	2	5	28	2
L8-900S	34	1	2	33	-1	2	3	4	90	4	2	6	50	3
L8-1000S	14	1	2	14	-1	2	2	3	33	2	2	5	17	1
L1-600S B	3	-1	1	3	-1	1	1	1	5	1	1	2	4	1
LMB-QA	2	-1	-1	1	-1	1	-1	-1	4	1	1	1	3	1
LMB-QA	2	-1	-1	1	-1	1	1	-1	4	1	1	1	2	1
LMB-QA	2	-1	-1	2	-1	1	1	-1	5	1	1	1	3	1
LMB-QA	3	-1	1	1	-1	1	1	-1	4	1	1	1	1	1

	085 - LPH	086 - LBI	087 - MAR	088 - HBA	089 - THI	090 - HPB	091 - LBI	092 - LPH	093 - LA	094 - LBI	095 - MAR	096 - LPH	097 - HBA	098 - THI

True North Mineral Laboratories
Kevin Cool
-1=Reporting Limit of 1pg/g (ppt=parts per trillion)

SOIL GAS HYDROCARBONS
(SGH) by GC/MS
CLEAVER PROJECT SITE

Activation Laboratories Ltd.
Date: August 24, 2011
R=Replicate Sample

	099 - LPH	100 - LPH	101 - MAR	102 - MBI	103 - LPH	104 - MAR	105 - ALK	106 - MBI	107 - MBI	108 - LPH	109 - MAR	110 - HBA	111 - MAR	112 - MBI
L1-0S	1	1	-1	1	1	1	1	-1	1	4	4	7	2	4
L1-100S	2	2	-1	1	2	2	3	-1	2	5	6	15	3	13
L1-200S	3	3	-1	2	2	4	5	1	2	5	8	35	4	23
L1-300S	1	2	-1	1	1	2	2	-1	1	3	5	10	2	7
L1-400S	1	2	-1	1	1	2	1	-1	2	4	5	10	2	18
L1-400S-R	1	2	-1	1	1	2	2	-1	1	4	5	11	2	21
L1-500S	2	2	-1	2	2	3	3	-1	2	5	7	22	3	39
L1-600S	1	2	-1	1	1	2	2	-1	2	4	6	15	3	31
L1-700S	2	2	-1	2	2	3	3	1	2	5	6	24	3	61
L1-800S	1	1	-1	1	1	1	2	-1	1	4	5	10	2	17
L1-900S	1	2	-1	1	1	2	2	-1	2	4	5	13	2	11
L1-1000S	1	2	-1	1	1	1	2	-1	1	4	5	11	2	10
L2-0S	2	2	-1	1	1	2	2	-1	1	4	6	17	3	15
L2-100S	2	2	-1	1	1	2	2	-1	1	4	5	15	3	16
L2-200S	2	2	-1	1	1	2	2	-1	1	4	5	13	3	15
L2-300S	2	2	-1	1	2	2	3	-1	2	5	6	21	3	21
L2-400S	2	2	-1	1	2	2	3	-1	1	4	5	18	3	21
L2-500S	2	2	-1	1	1	2	3	-1	2	5	6	21	3	22
L2-600S	2	2	-1	1	1	2	2	-1	1	4	5	15	3	23
L2-700S	1	2	-1	1	1	2	2	-1	1	4	5	10	2	16
L2-800S	1	2	-1	1	1	1	2	-1	1	4	5	13	3	10
L2-800S-R	1	1	-1	1	1	2	2	-1	1	4	5	15	3	12
L2-900S	2	2	-1	1	1	2	2	-1	1	5	5	16	3	14
L2-1000S	2	2	-1	1	1	2	2	-1	2	4	5	16	3	22
L3-0S	1	2	-1	1	1	2	1	-1	2	5	5	11	2	21
L3-100S	2	2	-1	1	1	2	2	-1	2	4	5	18	3	18
L3-200S	2	2	-1	1	1	2	2	-1	1	4	5	13	3	29
L3-300S	2	2	-1	1	2	3	3	-1	1	4	5	20	3	18
L3-400S	2	2	-1	2	2	3	5	-1	2	6	8	32	3	34
L3-500S	2	2	-1	2	2	3	4	-1	2	5	6	28	3	61
L3-600S	2	2	-1	1	1	3	3	-1	1	5	6	20	3	40
L3-700S	2	2	-1	2	1	3	3	-1	1	5	6	24	3	51
L3-800S	2	2	-1	1	1	2	3	-1	2	5	5	17	3	19
L3-900S	2	3	-1	2	2	3	5	1	2	5	9	46	4	39
L3-1000S	2	3	-1	2	2	3	4	-1	2	5	7	30	3	23
L4-0S	2	2	-1	1	1	2	3	-1	2	5	5	18	3	11
L4-100S	3	3	-1	2	2	3	4	1	2	5	8	27	3	24
L4-100S-R	3	3	-1	2	2	4	4	1	2	4	7	25	3	21
L4-200S	3	3	-1	2	2	4	4	-1	2	5	8	25	4	31
L4-300S	5	5	-1	3	3	6	9	1	2	7	13	64	5	41
L4-400S	2	2	-1	1	1	2	2	-1	2	4	6	13	3	17
L4-700S	2	2	-1	2	2	2	2	-1	1	5	6	16	3	37
L4-900S	2	3	-1	2	2	3	7	1	2	6	9	48	4	26
L4-1000S	2	2	-1	1	1	2	3	-1	1	5	5	15	3	15
L5-0S	1	2	-1	1	1	2	2	-1	1	5	5	11	3	6
L5-100S	2	2	-1	2	2	2	3	-1	2	5	7	27	3	11
L5-200S	1	2	-1	1	1	2	2	-1	1	5	5	13	3	7
L5-300S	2	2	-1	1	1	2	3	-1	2	4	6	16	3	10
L5-400S	1	2	-1	1	1	2	2	-1	2	4	5	14	3	15
L5-500S	1	2	-1	1	1	2	2	-1	1	4	5	12	3	14
L5-500S-R	1	2	-1	1	1	2	2	-1	1	4	5	11	2	14
L5-600S	1	2	-1	1	1	2	2	-1	2	4	5	13	3	18
L5-700S	2	2	-1	2	1	2	2	-1	1	5	6	14	3	18
L5-900S	1	2	-1	1	1	1	2	-1	1	4	4	11	3	11

	099 - LPH	100 - LPH	101 - MAR	102 - MBI	103 - LPH	104 - MAR	105 - ALK	106 - MBI	107 - MBI	108 - LPH	109 - MAR	110 - HBA	111 - MAR	112 - MBI
L5-1000S	1	2	-1	1	1	2	2	-1	1	5	5	10	3	8
L6-0S	1	1	-1	1	1	2	2	-1	1	4	4	12	2	8
L6-100S	2	2	-1	1	1	2	2	-1	2	4	5	12	2	10
L6-200S	2	2	-1	1	1	2	2	-1	1	4	6	15	2	18
L6-300S	2	3	-1	2	2	3	4	-1	2	5	7	27	3	16
L6-400S	2	2	-1	1	1	2	2	-1	2	4	5	14	3	9
L6-500S	2	2	-1	1	1	2	2	-1	2	4	5	13	3	8
L6-600S	1	2	-1	1	1	2	2	-1	1	4	5	11	3	6
L6-700S	1	2	-1	1	1	1	2	-1	2	5	5	10	2	12
L6-800S	1	2	-1	1	1	1	2	-1	1	4	5	11	2	7
L6-900S	2	2	-1	1	1	2	2	-1	2	4	5	12	3	17
L6-900S-R	2	2	-1	1	1	2	2	-1	1	4	5	14	3	17
L6-1000S	1	2	-1	1	1	2	2	-1	2	5	5	13	3	13
L7-0S	2	2	-1	1	1	2	2	-1	1	4	5	11	3	8
L7-100S	2	2	-1	1	2	2	4	1	2	5	6	28	3	14
L7-200S	2	2	-1	1	1	2	3	-1	2	4	5	18	3	13
L7-300S	2	2	-1	1	1	2	2	-1	2	4	6	16	3	11
L7-400S	2	2	-1	1	2	2	3	-1	1	4	5	23	3	15
L7-500S	2	2	-1	2	2	3	5	1	2	5	7	26	3	18
L7-600S	3	3	-1	2	2	2	4	-1	2	5	7	25	3	26
L7-700S	2	2	-1	1	2	2	3	-1	2	5	6	21	3	12
L7-800S	3	3	-1	2	2	3	4	1	2	6	7	35	4	18
L7-900S	1	2	-1	1	1	2	2	-1	1	4	6	14	3	7
L7-1000S	2	2	-1	1	1	2	2	-1	2	4	5	14	3	6
L8-0S	2	2	-1	1	1	3	2	-1	2	5	5	15	3	7
L8-100S	2	2	-1	1	2	2	3	-1	2	5	6	16	3	13
L8-200S	2	2	-1	1	1	2	2	-1	2	4	5	17	3	13
L8-200S-R	2	2	-1	1	1	2	3	-1	2	4	6	16	3	13
L8-300S	1	2	-1	1	1	2	4	-1	2	5	7	30	3	8
L8-400S	2	2	-1	1	1	2	2	-1	1	4	6	13	3	9
L8-500S	2	2	-1	1	1	2	2	-1	1	5	5	11	2	6
L8-600S	2	2	-1	2	2	3	3	1	2	5	5	25	3	6
L8-700S	1	2	-1	1	1	1	1	-1	1	4	5	9	2	6
L8-800S	3	3	-1	2	2	3	6	1	2	6	9	39	4	13
L8-900S	3	3	-1	2	2	3	5	1	2	5	9	53	5	14
L8-1000S	2	3	-1	2	2	3	3	-1	2	5	6	21	3	9
L1-600S B	2	2	-1	1	1	1	1	-1	2	4	5	8	2	5
LMB-QA	-1	1	-1	1	1	1	1	-1	1	4	5	5	2	3
LMB-QA	1	1	-1	1	1	1	1	-1	1	4	4	6	2	3
LMB-QA	1	1	-1	1	1	1	1	-1	2	4	5	10	2	3
LMB-QA	1	1	-1	1	1	1	1	-1	1	4	4	6	2	3

	099 - LPH	100 - LPH	101 - MAR	102 - MBI	103 - LPH	104 - MAR	105 - ALK	106 - MBI	107 - MBI	108 - LPH	109 - MAR	110 - HBA	111 - MAR	112 - MBI

True North Mineral Laboratories
Kevin Cool
-1=Reporting Limit of 1pg/g (ppt=parts per trillion)

SOIL GAS HYDROCARBONS
(SGH) by GC/MS
CLEAVER PROJECT SITE

Activation Laboratories Ltd.
Date: August 24, 2011
R=Replicate Sample

	113 - HBA	114 - MBI	115 - MBI	116 - MAR	117 - HA	118 - MPH	119 - HBA	120 - THI	121 - MPH	122 - MPH	123 - MPH	124 - MBI	125 - HAR	126 - MPH
L1-0S	8	3	4	3	13	4	7	3	3	6	3	4	4	4
L1-100S	11	6	6	3	28	5	14	3	5	8	4	5	5	4
L1-200S	22	10	9	4	64	6	28	3	5	9	5	6	6	5
L1-300S	1	4	4	3	19	3	9	3	3	6	3	5	4	4
L1-400S	3	8	8	3	19	4	10	3	4	6	4	5	4	4
L1-400S-R	11	9	8	3	21	4	11	3	4	7	4	5	5	4
L1-500S	14	16	13	3	48	5	18	3	5	9	5	8	6	6
L1-600S	10	11	9	3	29	4	13	3	4	6	4	8	5	4
L1-700S	14	19	16	4	44	6	19	4	5	7	5	8	5	5
L1-800S	9	7	6	3	17	4	11	3	4	6	3	8	4	4
L1-900S	12	6	6	3	34	4	13	3	-1	7	4	5	5	4
L1-1000S	8	5	5	3	19	4	11	3	4	7	4	4	4	4
L2-0S	10	7	7	3	33	4	15	3	4	7	4	5	5	4
L2-100S	9	8	8	3	26	5	14	3	4	6	4	5	5	5
L2-200S	9	8	7	3	21	4	13	3	4	6	4	5	4	4
L2-300S	13	9	8	4	37	5	17	3	5	7	4	6	5	5
L2-400S	11	9	9	3	33	5	16	3	5	7	5	5	5	5
L2-500S	12	9	9	3	61	5	21	3	5	8	5	-1	6	5
L2-600S	10	9	8	3	26	4	12	3	4	6	4	6	4	4
L2-700S	9	7	6	3	20	4	9	3	4	7	4	5	4	4
L2-800S	10	5	5	3	29	4	13	3	4	6	4	5	5	4
L2-800S-R	10	6	6	3	40	4	15	3	4	6	3	5	4	4
L2-900S	14	7	7	3	36	4	15	3	4	8	4	5	4	4
L2-1000S	12	10	8	3	44	5	14	3	4	7	4	5	4	4
L3-0S	8	8	7	3	17	4	10	3	4	8	4	5	4	4
L3-100S	13	8	8	3	36	4	15	3	4	7	4	6	-1	4
L3-200S	9	10	9	3	23	4	12	3	4	7	4	-1	4	4
L3-300S	13	8	8	3	38	4	15	3	4	7	4	5	4	4
L3-400S	17	13	13	4	93	7	29	3	6	10	6	8	7	6
L3-500S	14	20	14	4	46	5	19	3	5	7	5	8	5	5
L3-600S	14	13	11	3	38	4	15	3	4	8	5	6	5	5
L3-700S	2	16	13	3	41	5	17	3	5	7	4	7	5	5
L3-800S	11	7	7	3	44	5	17	3	4	8	5	5	5	5
L3-900S	27	14	14	5	91	7	32	3	6	9	5	7	6	6
L3-1000S	20	10	11	4	58	6	24	4	5	8	5	6	6	6
L4-0S	14	6	6	3	37	5	17	3	4	8	4	5	5	4
L4-100S	15	11	12	4	46	7	23	3	6	10	7	6	6	7
L4-100S-R	16	11	11	4	43	8	23	3	7	10	6	6	6	7
L4-200S	15	13	12	4	44	7	21	3	6	10	7	7	6	8
L4-300S	46	19	21	6	144	12	47	4	9	12	10	9	9	11
L4-400S	11	8	7	3	24	4	12	3	4	8	4	5	4	4
L4-700S	12	12	10	3	29	5	13	3	5	7	5	6	5	5
L4-900S	26	12	12	5	148	6	39	3	6	11	5	8	7	5
L4-1000S	11	7	7	3	30	5	15	3	5	7	4	5	5	5
L5-0S	10	4	5	3	25	4	13	3	4	7	4	5	4	4
L5-100S	20	6	6	4	50	5	22	3	5	7	4	5	5	5
L5-200S	11	5	5	3	23	4	13	3	4	7	4	5	4	4
L5-300S	12	5	6	3	33	5	15	3	5	8	4	6	5	5
L5-400S	10	6	6	3	25	4	11	3	4	7	4	5	4	4
L5-500S	9	6	6	3	21	4	11	3	4	7	4	5	4	4
L5-500S-R	10	6	6	3	20	4	10	-1	4	7	4	5	4	4
L5-600S	10	7	7	3	20	4	10	3	4	6	4	5	4	4
L5-700S	9	8	7	3	22	5	11	3	5	7	4	5	4	5
L5-900S	10	8	6	3	18	4	10	3	4	7	4	5	4	4

	113 - HBA	114 - MBI	115 - MBI	116 - MAR	117 - HA	118 - MPH	119 - HBA	120 - THI	121 - MPH	122 - MPH	123 - MPH	124 - MBI	125 - HAR	126 - MPH
L5-1000S	10	5	5	3	22	4	9	3	4	6	4	5	4	4
L6-0S	2	4	5	3	33	4	12	3	4	6	4	5	4	4
L6-100S	9	6	7	3	25	4	13	3	4	6	4	5	5	5
L6-200S	13	7	8	3	25	5	15	3	5	7	4	5	5	5
L6-300S	16	9	9	4	52	6	23	3	6	8	6	6	6	6
L6-400S	9	6	6	3	24	5	14	3	4	7	4	5	5	5
L6-500S	8	5	6	3	30	5	14	3	4	7	4	5	5	4
L6-600S	1	4	5	3	21	4	10	3	4	7	4	5	4	4
L6-700S	9	6	6	3	22	4	12	4	4	6	4	5	4	4
L6-800S	9	5	5	3	17	4	11	3	4	6	3	4	4	4
L6-900S	12	8	7	3	29	4	12	3	4	7	4	-1	4	4
L6-900S-R	12	7	7	3	28	4	11	3	4	7	4	5	4	4
L6-1000S	11	6	6	3	27	4	12	3	4	6	4	5	4	4
L7-0S	9	5	5	3	21	5	10	3	5	7	5	5	4	5
L7-100S	18	7	7	4	88	6	26	4	5	7	5	8	5	6
L7-200S	14	7	6	3	47	4	18	3	4	7	4	5	5	5
L7-300S	13	6	6	3	33	4	15	3	4	7	4	5	4	5
L7-400S	15	8	9	4	41	5	20	3	5	7	5	5	5	5
L7-500S	17	9	10	4	66	6	25	3	5	9	5	6	5	6
L7-600S	15	12	11	3	45	7	23	3	6	8	5	6	5	6
L7-700S	18	7	7	4	45	5	18	3	5	8	4	6	5	5
L7-800S	20	10	11	5	64	7	30	4	6	8	6	6	6	7
L7-900S	11	5	5	3	24	4	11	3	4	8	4	5	5	4
L7-1000S	11	4	5	3	23	4	12	3	4	7	4	6	4	4
L8-0S	11	7	8	3	27	5	13	4	5	7	4	6	5	4
L8-100S	11	7	8	3	33	5	17	3	5	8	5	6	5	5
L8-200S	13	7	7	3	37	5	17	3	5	7	4	6	5	5
L8-200S-R	13	7	7	3	32	5	17	3	4	7	4	8	5	5
L8-300S	22	6	7	5	70	4	27	3	4	8	4	5	6	5
L8-400S	11	5	6	3	21	4	11	3	4	7	4	5	4	4
L8-500S	10	5	5	3	27	4	14	3	4	7	4	4	4	4
L8-600S	15	5	6	4	50	4	21	3	4	8	4	6	6	5
L8-700S	9	4	5	3	16	4	8	3	4	6	4	5	-1	4
L8-800S	26	9	11	4	69	7	31	3	6	9	6	7	6	6
L8-900S	34	9	11	6	108	8	41	3	6	10	6	7	7	7
L8-1000S	15	7	8	4	40	6	18	3	5	8	5	5	5	5
L1-600S B	8	4	4	3	13	4	8	3	4	7	4	4	4	4
LMB-QA	6	3	3	3	12	3	8	3	3	6	3	4	4	3
LMB-QA	9	3	3	2	13	3	9	3	3	6	3	4	4	4
LMB-QA	11	3	3	3	18	3	9	3	4	6	4	4	4	4
LMB-QA	7	3	3	2	12	4	7	3	3	6	4	4	4	4

	113 -HBA	114 - MBI	115 - MBI	116 - MAR	117 - HA	118 - MPH	119 - HBA	120 - THI	121 - MPH	122 - MPH	123 - MPH	124 - MBI	125 - HAR	126 - MPH

	127 - MPH	128 - MPH	129 - HAR	130 - HAR	131 - MPH	132 - ALK	133 - HAR	134 - HAR	135 - MPH	136 - MPH	137 - HBI	138 - HBI	139 - HPH	140 - HPH
L1-0S	3	2	3	4	3	8	7	11	7	7	4	6	-1	6
L1-100S	3	3	3	4	4	13	8	12	9	8	5	7	1	7
L1-200S	4	3	3	4	5	22	10	16	9	8	6	8	8	7
L1-300S	3	2	3	4	3	9	8	12	7	6	4	6	7	6
L1-400S	3	2	3	4	4	10	8	10	7	7	5	7	7	6
L1-400S-R	3	2	3	4	4	11	8	11	8	8	5	6	8	6
L1-500S	4	2	3	4	5	16	8	14	9	9	5	7	8	6
L1-600S	3	2	3	4	4	12	8	11	9	6	4	7	7	6
L1-700S	4	2	3	4	5	16	9	13	9	8	7	8	1	6
L1-800S	4	2	3	4	4	10	8	11	8	6	4	6	7	6
L1-900S	3	2	3	4	4	12	8	11	7	7	4	6	1	6
L1-1000S	3	2	3	4	4	10	8	10	8	7	5	6	-1	6
L2-0S	3	2	3	4	4	13	8	12	9	7	5	7	7	6
L2-100S	4	3	3	4	4	12	8	12	9	7	4	7	8	7
L2-200S	4	2	3	4	4	12	8	12	8	7	5	7	-1	6
L2-300S	4	3	3	4	4	15	9	13	8	8	6	7	7	6
L2-400S	4	2	3	5	5	14	9	12	9	8	6	7	2	7
L2-500S	4	3	3	4	4	16	9	12	9	7	5	-1	8	7
L2-600S	4	2	3	4	4	12	8	11	7	7	5	7	7	6
L2-700S	3	3	3	4	4	10	8	11	8	7	5	6	7	6
L2-800S	3	2	3	4	4	11	7	11	9	7	4	6	7	6
L2-800S-R	3	2	3	4	4	11	8	11	7	7	4	7	7	6
L2-900S	3	2	3	4	4	13	8	11	8	6	5	7	7	6
L2-1000S	3	2	3	4	4	13	8	11	8	8	5	7	7	6
L3-0S	3	2	3	4	4	9	8	10	8	6	4	7	-1	6
L3-100S	4	2	3	4	4	13	8	11	8	7	5	6	1	6
L3-200S	3	2	3	4	4	11	8	11	8	7	5	7	8	6
L3-300S	3	2	3	4	4	13	8	11	8	7	4	7	8	7
L3-400S	4	3	4	5	5	21	9	15	10	10	7	9	9	7
L3-500S	4	2	3	4	4	15	8	12	8	8	5	8	1	7
L3-600S	4	2	3	4	4	13	8	11	8	8	6	7	8	6
L3-700S	4	2	3	4	5	16	8	11	9	7	5	8	1	7
L3-800S	3	2	3	4	4	14	8	12	9	7	5	7	8	6
L3-900S	4	3	4	5	5	25	10	17	9	8	7	9	9	7
L3-1000S	4	3	3	4	5	21	9	15	10	7	5	8	1	7
L4-0S	3	2	3	4	4	15	9	13	8	6	5	7	7	6
L4-100S	5	3	3	4	5	19	9	16	10	8	5	8	9	7
L4-100S-R	4	3	3	4	5	20	9	16	9	7	6	8	9	7
L4-200S	5	3	3	4	5	19	9	14	10	8	6	8	9	6
L4-300S	7	4	4	5	7	37	11	24	14	10	8	11	12	10
L4-400S	3	2	3	4	4	12	8	13	8	8	4	6	1	6
L4-700S	4	2	3	4	4	13	9	13	9	8	6	7	1	6
L4-900S	4	3	4	5	5	25	10	17	10	8	6	8	8	7
L4-1000S	4	3	3	4	4	14	9	13	9	7	5	7	8	6
L5-0S	3	3	3	4	4	12	8	11	8	7	4	7	7	6
L5-100S	4	3	3	4	4	17	9	14	9	8	5	7	1	6
L5-200S	3	2	3	4	4	12	9	12	8	7	5	6	8	7
L5-300S	4	2	3	4	4	14	9	13	8	8	5	7	8	6
L5-400S	3	2	3	4	4	11	8	11	8	7	5	6	8	6
L5-500S	3	2	3	4	4	11	8	11	9	7	5	7	7	6
L5-500S-R	3	2	3	4	4	10	7	11	8	8	5	7	7	6
L5-600S	3	2	3	3	4	11	8	11	7	6	4	6	1	6
L5-700S	4	2	3	4	4	12	8	10	8	6	5	7	7	6
L5-900S	4	2	3	4	4	11	8	11	9	7	4	6	7	6

	127 - MPH	128 - MPH	129 - HAR	130 - HAR	131 - MPH	132 - ALK	133 - HAR	134 - HAR	135 - MPH	136 - MPH	137 - HBI	138 - HBI	139 - HPH	140 - HPH
L5-1000S	3	2	3	4	4	10	9	12	8	7	4	7	1	6
L6-0S	3	2	3	3	4	11	9	11	7	7	5	7	7	8
L6-100S	4	2	3	4	4	13	8	11	8	7	4	7	8	6
L6-200S	4	2	3	4	4	13	9	12	8	7	6	7	8	7
L6-300S	5	3	3	4	5	19	9	14	9	8	7	8	8	6
L6-400S	4	2	3	4	4	13	9	12	8	8	5	6	8	8
L6-500S	3	2	3	4	4	13	8	11	9	7	5	6	-1	6
L6-600S	4	2	3	4	4	10	9	11	8	6	5	6	8	8
L6-700S	3	2	3	4	4	11	8	10	8	7	5	6	7	6
L6-800S	3	2	3	4	4	11	8	11	8	7	4	6	8	7
L6-900S	3	2	3	4	4	12	8	11	7	6	4	6	-1	6
L6-900S-R	3	2	3	4	4	12	8	11	8	7	4	7	7	6
L6-1000S	3	2	3	4	4	12	8	11	8	8	4	6	7	6
L7-0S	4	2	3	3	4	11	8	11	8	7	5	7	1	6
L7-100S	4	3	3	4	5	20	10	13	9	7	5	8	8	7
L7-200S	4	2	3	4	4	15	9	13	9	7	5	7	8	6
L7-300S	4	2	3	4	4	14	8	14	9	8	4	7	1	6
L7-400S	4	3	3	4	4	17	9	12	8	7	5	7	2	-1
L7-500S	4	2	4	5	4	21	10	13	9	8	6	9	9	7
L7-600S	4	3	3	5	5	18	9	13	9	7	5	8	9	7
L7-700S	4	2	3	4	4	16	9	13	8	7	6	8	1	6
L7-800S	5	3	4	4	6	22	10	16	11	9	6	8	9	8
L7-900S	3	2	3	4	4	12	9	12	7	7	4	7	7	6
L7-1000S	3	2	3	4	4	11	9	13	8	7	4	7	1	7
L8-0S	3	3	3	4	4	12	8	12	8	7	4	6	8	6
L8-100S	4	2	3	4	4	14	8	11	8	7	4	6	8	8
L8-200S	4	2	3	4	4	15	9	12	9	8	5	7	1	6
L8-200S-R	4	2	3	4	5	15	8	11	9	7	4	6	8	7
L8-300S	4	3	3	5	4	20	9	14	9	8	5	7	8	7
L8-400S	3	2	3	4	4	11	8	11	8	7	4	6	7	6
L8-500S	3	2	3	4	4	13	8	10	9	6	4	7	7	6
L8-600S	4	2	3	4	4	17	9	14	8	7	5	7	7	6
L8-700S	3	2	3	3	4	10	8	11	8	7	4	6	7	6
L8-800S	5	3	4	5	6	23	10	15	10	9	6	8	1	7
L8-900S	5	3	4	5	6	29	10	20	10	9	7	9	1	7
L8-1000S	4	3	3	4	4	14	8	12	9	7	5	8	8	7
L1-600S B	3	2	3	4	4	8	8	10	8	7	5	6	8	6
LMB-QA	3	2	3	3	3	8	8	10	7	6	4	6	7	6
LMB-QA	3	2	3	3	4	8	8	10	8	6	4	6	7	8
LMB-QA	3	2	3	3	4	9	8	10	7	7	4	6	7	6
LMB-QA	3	2	3	3	4	8	7	10	8	6	4	6	7	6

122

	127 - MPH	128 - MPH	129 - HAR	130 - HAR	131 - MPH	132 - ALK	133 - HAR	134 - HAR	135 - MPH	136 - MPH	137 - HBI	138 - HBI	139 - HPH	140 - HPH

	141 - HBI	142 - HPH	143 - HA	144 - HBI	145 - HBA	146 - HPH	147 - HBI	148 - HPH	149 - HBI	150 - HPH	151 - HBI	152 - HPH	153 - HPH	154 - HPH
L1-0S	6	8	26	8	15	2	5	6	7	1	7	8	11	12
L1-100S	8	9	57	9	29	4	5	7	-1	1	6	2	12	2
L1-200S	8	8	94	9	52	2	6	6	9	8	8	9	12	12
L1-300S	7	7	29	8	20	12	5	6	8	7	6	1	11	12
L1-400S	7	7	32	8	18	2	5	6	8	1	7	1	10	11
L1-400S-R	8	1	35	8	19	1	5	6	8	7	7	9	2	12
L1-500S	9	9	70	11	36	13	6	6	10	8	7	9	11	2
L1-600S	9	8	44	9	28	2	6	6	1	8	7	9	12	12
L1-700S	11	1	64	11	39	2	6	7	9	7	7	9	12	12
L1-800S	7	8	26	9	22	13	5	6	9	7	7	1	12	11
L1-900S	7	8	41	8	25	12	5	6	8	8	6	9	12	11
L1-1000S	7	8	33	8	23	2	5	6	8	1	7	1	11	2
L2-0S	8	1	47	9	31	2	6	6	8	8	7	9	11	12
L2-100S	8	8	44	9	29	13	5	6	8	8	7	10	12	11
L2-200S	7	8	36	9	25	2	5	6	8	7	7	1	11	11
L2-300S	8	8	60	10	36	3	6	6	9	8	7	9	12	12
L2-400S	9	8	51	9	32	14	6	6	10	8	7	1	12	12
L2-500S	1	1	67	10	37	2	6	7	9	8	7	1	13	12
L2-600S	8	1	43	9	25	2	6	6	9	8	7	9	11	11
L2-700S	7	2	32	8	20	2	5	6	8	8	7	9	11	11
L2-800S	8	7	34	8	26	2	6	6	8	8	7	2	11	11
L2-800S-R	7	8	42	8	26	12	5	6	8	7	6	9	11	11
L2-900S	8	8	55	8	27	12	5	6	8	7	7	2	13	11
L2-1000S	1	8	51	9	28	13	6	6	8	7	7	9	12	11
L3-0S	7	8	29	8	18	2	5	6	8	7	7	9	11	11
L3-100S	7	8	39	8	33	2	6	6	9	7	7	9	11	1
L3-200S	8	7	33	2	23	12	6	6	9	7	7	9	11	11
L3-300S	8	1	43	9	30	2	5	6	8	1	7	9	12	12
L3-400S	12	9	98	12	58	15	7	7	10	9	7	10	13	12
L3-500S	11	8	58	11	35	1	6	6	2	7	7	1	11	11
L3-600S	9	8	51	9	28	2	5	6	9	1	7	9	11	12
L3-700S	11	8	58	11	33	13	6	6	9	8	7	2	2	12
L3-800S	8	8	43	9	33	2	6	6	9	8	7	10	12	11
L3-900S	11	9	130	12	64	15	7	7	2	8	8	10	13	2
L3-1000S	10	1	88	12	48	2	7	7	10	8	7	2	11	13
L4-0S	8	9	74	9	39	14	6	7	9	8	7	-1	12	12
L4-100S	12	10	77	12	39	15	7	7	9	9	8	6	13	13
L4-100S-R	10	2	78	11	41	3	6	7	9	9	8	10	13	2
L4-200S	11	10	69	12	40	16	7	7	2	8	8	10	13	13
L4-300S	15	14	171	16	85	12	8	9	12	10	8	13	18	14
L4-400S	7	7	37	9	24	3	5	6	1	8	6	2	11	12
L4-700S	10	1	50	10	28	2	6	7	8	7	7	9	12	1
L4-900S	10	10	130	12	64	15	7	7	10	8	7	11	14	12
L4-1000S	8	8	42	2	23	2	6	6	9	8	7	1	12	12
L5-0S	7	8	38	9	26	3	5	7	8	7	7	9	12	12
L5-100S	8	1	72	10	41	2	6	6	9	8	7	2	12	12
L5-200S	7	8	39	8	31	2	6	7	8	8	7	9	11	2
L5-300S	8	8	52	9	29	1	5	7	9	8	7	2	12	2
L5-400S	8	8	34	8	23	3	5	6	8	7	7	2	12	3
L5-500S	7	7	32	8	19	-1	6	6	1	8	7	9	11	2
L5-500S-R	8	1	27	9	21	2	5	6	8	7	7	9	11	12
L5-600S	8	8	33	9	21	12	5	7	8	7	6	1	11	11
L5-700S	9	9	39	9	24	1	6	6	-1	7	7	8	10	12
L5-900S	8	8	33	9	21	12	5	6	8	7	7	9	11	2

	141 - HBI	142 - HPH	143 - HA	144 - HBI	145 - HBA	146 - HPH	147 - HBI	148 - HPH	149 - HBI	150 - HPH	151 - HBI	152 - HPH	153 - HPH	154 - HPH
L5-1000S	7	8	33	8	22	3	5	6	8	7	7	9	2	12
L6-0S	7	7	42	1	28	3	5	6	8	7	7	2	10	2
L6-100S	8	8	37	10	23	2	6	6	1	8	7	10	12	11
L6-200S	8	8	39	9	28	2	6	6	2	8	7	9	11	2
L6-300S	10	10	87	12	44	15	7	7	10	8	8	10	13	13
L6-400S	8	8	47	9	30	14	6	6	2	8	7	2	11	11
L6-500S	8	8	60	9	27	13	6	7	9	-1	7	2	12	12
L6-600S	7	7	37	8	21	12	5	6	8	8	7	9	12	11
L6-700S	8	1	32	9	26	1	6	6	8	8	7	9	11	12
L6-800S	7	8	35	8	24	1	5	6	1	8	7	2	11	12
L6-900S	8	8	32	9	15	3	6	6	8	7	7	9	11	11
L6-900S-R	7	7	36	8	22	2	5	6	8	7	6	10	11	11
L6-1000S	8	7	34	9	25	2	5	6	8	8	7	1	2	12
L7-0S	7	1	39	9	21	2	5	6	8	8	7	10	11	12
L7-100S	9	9	96	10	48	2	6	7	9	8	7	10	13	12
L7-200S	8	7	66	9	41	2	6	6	9	8	7	10	12	12
L7-300S	8	8	54	9	33	13	6	6	1	1	7	9	12	2
L7-400S	9	2	75	10	43	2	6	6	9	7	7	2	12	12
L7-500S	12	9	96	13	51	15	7	7	11	8	7	11	12	13
L7-600S	10	10	69	12	51	2	7	6	9	-1	7	9	13	2
L7-700S	9	8	82	11	39	2	6	7	9	8	7	2	12	2
L7-800S	10	11	118	12	66	3	7	7	10	9	8	11	14	12
L7-900S	7	7	35	9	22	2	5	6	8	8	7	1	11	12
L7-1000S	7	8	39	8	21	12	6	6	8	8	7	10	13	12
L8-0S	7	9	38	9	19	13	6	6	1	8	7	10	13	12
L8-100S	8	9	48	10	41	3	6	7	8	8	7	1	12	12
L8-200S	8	9	63	11	37	2	7	7	9	1	7	10	13	12
L8-200S-R	9	9	54	9	32	3	6	7	9	8	7	10	12	13
L8-300S	8	10	136	11	60	14	6	7	9	1	7	1	13	12
L8-400S	7	8	37	8	21	1	5	6	8	7	7	9	11	11
L8-500S	8	8	33	8	35	3	5	6	1	8	7	1	11	1
L8-600S	8	9	83	10	42	13	6	7	8	8	7	2	12	12
L8-700S	7	1	29	2	17	2	6	6	8	2	7	2	11	2
L8-800S	10	11	109	13	71	16	8	7	2	8	8	10	13	13
L8-900S	11	12	180	14	86	17	7	7	2	9	8	11	14	2
L8-1000S	9	9	55	10	37	13	6	7	9	8	7	10	12	13
L1-600S B	7	7	-1	9	14	2	5	1	8	8	6	9	11	12
LMB-QA	6	7	23	8	15	2	5	6	1	1	6	1	10	12
LMB-QA	6	1	23	8	22	2	5	6	7	7	6	9	11	11
LMB-QA	7	6	23	8	25	2	5	5	8	7	6	1	2	11
LMB-QA	7	1	19	8	18	2	5	6	8	7	6	9	11	11

	141 - HBI	142 - HPH	143 - HA	144 - HBI	145 - HBA	146 - HPH	147 - HBI	148 - HPH	149 - HBI	150 - HPH	151 - HBI	152 - HPH	153 - HPH	154 - HPH

	155 - HPH	156 - HBI	157 - HAR	158 - HBA	159 - HBA	160 - HBI	161 - HA	162 - HPH
L5-1000S	11	10	9	25	12	13	60	12
L6-0S	12	10	10	26	2	13	21	13
L6-100S	12	10	9	25	2	13	31	12
L6-200S	12	10	11	29	12	12	33	13
L6-300S	12	10	11	39	14	13	45	2
L6-400S	12	10	10	-1	13	13	39	12
L6-500S	12	11	11	31	13	13	41	13
L6-600S	12	10	10	28	13	13	46	2
L6-700S	12	10	11	28	13	13	85	13
L6-800S	11	9	11	12	12	11	55	13
L6-900S	12	10	9	22	12	3	73	1
L6-900S-R	12	9	10	25	13	13	74	12
L6-1000S	12	9	10	25	12	2	63	13
L7-0S	11	-1	11	27	12	13	40	7
L7-100S	12	10	11	35	13	13	50	13
L7-200S	12	11	10	29	12	13	42	13
L7-300S	11	10	11	30	13	13	43	12
L7-400S	12	10	10	30	2	13	45	13
L7-500S	3	11	11	45	14	14	61	13
L7-600S	12	10	11	32	2	13	49	13
L7-700S	12	10	11	36	2	14	52	13
L7-800S	13	11	11	39	13	13	54	14
L7-900S	11	10	10	26	13	13	38	13
L7-1000S	12	9	10	26	13	14	36	13
L8-0S	12	10	10	-1	12	13	38	13
L8-100S	12	9	10	32	12	12	38	13
L8-200S	11	11	10	33	13	14	42	12
L8-200S-R	13	11	11	30	12	12	41	13
L8-300S	12	10	11	38	13	2	58	13
L8-400S	12	10	10	-1	12	13	32	13
L8-500S	12	10	10	23	12	13	30	2
L8-600S	11	10	11	36	14	2	51	1
L8-700S	11	10	11	25	2	13	36	12
L8-800S	12	11	12	38	2	14	53	2
L8-900S	13	11	11	43	13	14	63	14
L8-1000S	12	11	10	27	12	13	40	3
L1-600S B	11	9	10	22	13	12	26	13
LMB-QA	3	9	10	25	12	13	31	12
LMB-QA	12	10	10	26	11	12	33	2
LMB-QA	12	10	11	24	13	2	32	13
LMB-QA	11	9	10	23	12	12	16	12

	155 - HPH	156 - HBI	157 - HAR	158 - HBA	159 - HBA	160 - HBI	161 - HA	162 - HPH

Appendix III

Cleaver Property
Project Photos

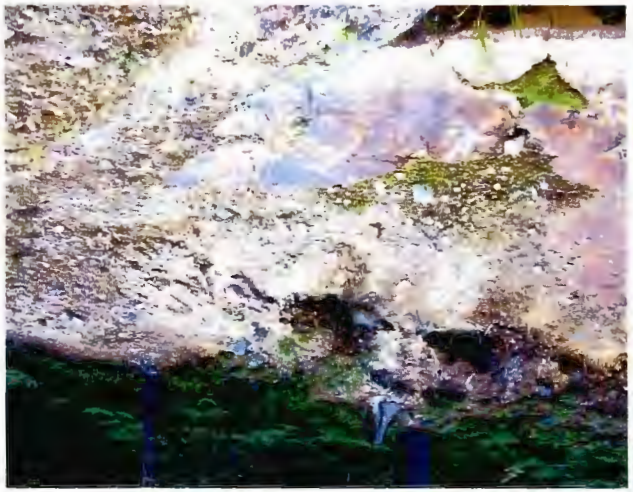







KC-759



KC-756



KC-756










Appendix IV

Cerussite-Galena (Pb) Assays

Laboratoire Expert Inc.
127, Boulevard Industriel

Rouyn-Noranda
Québec
Canada J9X 6P2
Telephone : (819) 762-710 Fax : (819) 762-7510

*** Certificate of analysis ***

Date : 11/1/2011

Client : Cattarello Assayers Inc.

Addressee : Chris Hacquard

475 Railway Street
Timmins
Ontario
P4N 2P5

Telephone : (705) 2[illegible]-4444
Fax :

Folder : **32263**
Your Order number :
Project : **JOB 1161**

Total number 1

Designation	Ag AAT-7 ppm 0.2	Ag-Dup AAT-7 ppm 0.2	Cu AAT-7 ppm 2	Cu-Dup AAT-7 ppm 2	Zn AAT-7 ppm 2	Zn-Dup AAT-7 ppm 2	Pb AAT-7 ppm 2	Pb-Dup AAT-7 ppm 2	Pb AAT-8 % 0.01	Pb-Dup AAT-8 % 0.01
1	199.6	197.8	16	18	1535	1554	>DL	>DL	65.8	63.6

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Certificate Of Analysis

Cattarello Assayers Inc.

Number Of Samples: 1

Client: Larry Garvais

Job: 1161

Type Of Sample: ROCK

Received Date: 2011-10-14

Processed Date: 2011-10-18

Report Date: 2011-10-19

Test Method: FAAA

Sample ID	AU FA-GEO Gr/Mt 0.005	Au-Dup FA-GEO Gr/Mt 0.005	Au FA-Grav. - Gr/Mt 0.005
1	0.024		

Approved By Chief Analyst:

Issue Date	Revision Date	Rev #	Owner	Form ID	Page
2/18/2010	2/18/2010	1	Chris Hacquard	ANAL-002	1 Of 1

Appendix V

SGH Sample Logs

APPENDIX V - Sample Field Logs

SAMPLE NAME								
	Local	(cm)					NAD83, UTM, Zone 17	
Line	southing	Depth	Colour	Type	Condition	Terrain	Northing	Easting
L1	0S	12	black	organic	damp	mix, pine	5333800.00	496660.00
L1	100S	10	brown	sand	damp	mix, poplar	5333700.00	496660.00
L1	200S	10	orange-brown	organic	damp	poplar, pine	5333600.00	496660.00
L1	300S	35	black	organic	wet	cedar	5333500.00	496660.00
L1	400S	6	brown-black	organic	wet	swamp	5333400.00	496660.00
L1	500S	10	brown	sediment	wet	jack pine	5333300.00	496660.00
L1	600S	10	brown	sediment	wet	jack pine	5333200.00	496660.00
L1	700S	10	brown	sediment	wet	jack pine	5333100.00	496660.00
L1	800S	20	brown	organic	wet	swamp	5333000.00	496660.00
L1	900S	15	black-grey	clay	damp	jack pine	5332900.00	496660.00
L1	1000S	15	brown-black	organic	wet	clear cut	5332800.00	496660.00
L2	0S	20	orange-rusty	organic	damp	jack pine	5333800.00	496760.00
L2	100S	15	orange-rusty	organic	damp	jack pine	5333700.00	496760.00
L2	200S	15	orange-rusty	organic	wet	jack pine	5333600.00	496760.00
L2	300S	20	orange-grey	organic and sand mix	damp	jack pine	5333500.00	496760.00
L2	400S	15	orange	organic and sand mix	damp	jack pine	5333400.00	496760.00
L2	500S	10	orange-grey	organic	damp	jack pine	5333300.00	496760.00
L2	600S	10	brown	sediment	wet	lake	5333200.00	496760.00
L2	700S	10	green-grey	clay	wet	lake	5333100.00	496760.00
L2	800S	10	brown-black	organic	damp	jack pine	5333000.00	496760.00
L2	900S	10	tan-brown	organic	damp	jack pine	5332900.00	496760.00
L2	1000S	5	grey-brown	clay and organic mix	damp	clear cut	5332800.00	496760.00
L3	0S	25	brown	organic	damp	swamp	5333800.00	496860.00
L3	100S	90	brown-black	organic	wet	lake	5333700.00	496860.00
L3	200S	90	brown	organic	wet	lake	5333600.00	496860.00
L3	300S	180	brown	organic	wet	lake	5333500.00	496860.00
L3	400S	15	rusty-white	organic	damp	jack pine	5333400.00	496860.00
L3	500S	10	brown	sediment	wet	lake	5333300.00	496860.00
L3	600S	10	brown	sediment	wet	lake	5333200.00	496860.00
L3	700S	10	brown	sediment	wet	lake	5333100.00	496860.00
L3	800S	10	tan-brown	organic	damp	jack pine	5333000.00	496860.00
L3	900S	10	orange-red	organic	damp	jack pine	5332900.00	496860.00
L3	1000S	5	orange-grey	organic	damp	clear cut	5332800.00	496860.00

L4	0S	15	grey-orange	organic	dry	jack pine and black spruce	5333800.00	496960.00
L4	100S	10	grey-orange-tan	organic	damp	birch	5333700.00	496960.00
L4	200S	10	orange	organic	damp	jack pine	5333600.00	496960.00
L4	300S	10	orange	organic	damp	black spruce	5333500.00	496960.00
L4	400S	10	brown	sediment	wet	lake	5333400.00	496960.00
L4	500S	10	brown	sediment	wet	lake	5333300.00	496960.00
L4	600S	10	brown	sediment	wet	lake	5333200.00	496960.00
L4	700S	10	brown	sediment	wet	lake	5333100.00	496960.00
L4	800S	10	brown	sediment	wet	lake	5333000.00	496960.00
L4	900S	10	orange-grey	organic	damp	jack pine	5332900.00	496960.00
L4	1000S	10	brown-orange	organic	damp	jack pine	5332800.00	496960.00
L5	0S	10	orange-brown	organic	damp	poplar	5333800.00	497060.00
L5	100S	10	orange-black	organic	damp	poplar	5333700.00	497060.00
L5	200S	12	orange-brown	organic	damp	birch	5333600.00	497060.00
L5	300S	15	orange-grey	organic	damp	poplar and pine	5333500.00	497060.00
L5	400S	30	brown	organic	wet	swamp	5333400.00	497060.00
L5	500S	10	brown	sediment	wet	lake	5333300.00	497060.00
L5	600S	10	brown	sediment	wet	lake	5333200.00	497060.00
L5	700S	10	brown	sediment	wet	lake	5333100.00	497060.00
L5	800S	10	brown	sediment	wet	swamp	5333000.00	497060.00
L5	900S	10	brown	sediment	wet	swamp	5332900.00	497060.00
L5	1000S	10	brown	sediment	wet	lake	5332800.00	497060.00
L6	0S	7	grey-brown	organic	damp	poplar	5333800.00	497160.00
L6	100S	10	yellow	organic	damp	birch	5333700.00	497160.00
L6	200S	6	grey-orange	organic	dry	poplar	5333600.00	497160.00
L6	300S	10	white-orange	organic	damp	white spruce	5333500.00	497160.00
L6	400S	10	beige-orange	clay and sand mix	damp	white spruce	5333400.00	497160.00
L6	500S	10	grey-orange	organic and sand mix	damp	balsam	5333300.00	497160.00
L6	600S	10	brown-black	organic	damp	black spruce	5333200.00	497160.00
L6	700S	10	brown	sand	wet	lake	5333100.00	497160.00
L6	800S	15	brown-black	sand	wet	lake	5333000.00	497160.00
L6	900S	90	brown	organic	wet	lake	5332900.00	497160.00
L6	1000S	120	brown-beige	organic	wet	lake	5332800.00	497160.00
L7	0S	3	red-brown	organic	wet	rocky	5333800.00	497260.00
L7	100S	10	grey-black	organic	dry	birch and poplar	5333700.00	497260.00
L7	200S	10	orange-grey	organic	damp	birch	5333600.00	497260.00

L7	300S	10	grey-black	organic	damp	white spruce	5333500.00	497260.00
L7	400S	10	orange	organic	damp	balsam	5333400.00	497260.00
L7	500S	10	grey	clay	wet	balsam	5333300.00	497260.00
L7	600S	15	orange-brown	clay	damp	white spruce	5333200.00	497260.00
L7	700S	10	grey-black	organic and clay mix	damp	balsam	5333100.00	497260.00
L7	800S	10	red-orange	organic	damp	jack pine	5333000.00	497260.00
L7	900S	25	brown	organic	wet	swamp	5332900.00	497260.00
L7	1000S	10	brown	organic	damp	jack pine	5332800.00	497260.00
L8	0S	6	black	organic	wet	white pine	5333800.00	497360.00
L8	100S	10	orange-grey	organic and clay mix	wet	balsam	5333700.00	497360.00
L8	200S	10	orange-grey	organic	dry	balsam	5333600.00	497360.00
L8	300S	10	grey-black	organic	damp	birch	5333500.00	497360.00
L8	400S	10	black	organic	damp	cedar	5333400.00	497360.00
L8	500S	12	brown	organic	wet	cedar	5333300.00	497360.00
L8	600S	10	black	organic	damp	cedar	5333200.00	497360.00
L8	700S	30	black	organic	wet	cedar	5333100.00	497360.00
L8	800S	10	orange	organic	damp	balsam	5333000.00	497360.00
L8	900S	10	brown-orange	organic	damp	balsam	5332900.00	497360.00
L8	1000S	12	orange	organic	damp	balsam	5332800.00	497360.00

Appendix VI

Assays
Code 8 Peroxide ICP
Assay for As, Cu, Pb, Zn

Sample Location Map from previous report included for reference

Quality Analysis ... **Actlabs** *Innovative Technologies*

Date Submitted: 25-Jul-11
Invoice No.: A11-7342
Invoice Date: 30-Nov-11
Your Reference: CLEAVER-GEOCHEM

True North Mineral Laboratories Inc.
190 Quartz Avenue
Timmins Ontario P4N 4L7
Canada

ATTN: Kevin Cool

CERTIFICATE OF ANALYSIS

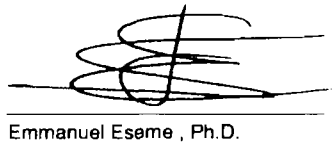
8 Rock samples were submitted for analysis.

The following analytical package was requested: Code UT-1-0.5g Aqua Regia ICP/MS

REPORT **A11-7342**

Notes:
Assays are recommended for values >10,000 for Cu and Au. Due to matrix change used in AR-MS analysis, the detection limts for Au has been modified to 5ppb. The AU from AR-MS is only semi-quantitative. For accurate Au data,fire assay is recommended.

CERTIFIED BY :



Emmanuel Eseme , Ph.D.
Quality Control

ISO/IEC 17025
SCC Accredited
LAB 266
LAB 266
Accrédité CCN

ACTIVATION LABORATORIES LTD.

1336 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Activation Laboratories Ltd. Report: A11-7342 rev 2

Analyte Symbol	Li	Be	B	Na	Mg	Al	K	Si	Ca	Sc	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb	Sr
Unit Symbol	ppm	ppm	ppm	%	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.1	0.1	1	0.001	0.01	0.01	0.01	0.02	0.01	0.1	1	0.5	1	0.01	0.1	0.1	0.01	0.1	0.02	0.1	0.1	0.1	0.1	0.5
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
KC-755	6.1	0.1	< 1	0.045	0.27	0.48	0.15	0.88	0.30	5.8	27	30.4	98	1.78	47.7	105	256	978	6.42	0.1	63.2	1.8	10.1	4.0
KC-758	7.0	0.1	< 1	0.064	0.41	0.50	0.07	1.06	0.23	4.0	32	72.7	139	12.3	53.5	125	456	49.5	8.10	0.3	468	15.6	4.2	3.9
KC-757	29.1	0.2	1	0.218	2.74	3.08	0.14	0.06	0.85	8.0	82	166	360	3.91	19.4	108	26.0	73.0	12.9	0.1	4.0	< 0.1	8.2	13.0
KC-758	11.3	< 0.1	< 1	0.145	1.16	1.39	0.07	0.07	0.80	3.2	37	124	221	2.08	15.7	89.8	34.0	41.0	5.58	0.1	3.1	< 0.1	4.4	10.5
KC-759	47.3	1.0	4	0.090	1.74	2.25	0.19	0.54	0.47	9.0	70	121	548	3.64	17.5	88.3	9.78	75.6	14.2	0.1	9.0	< 0.1	16.8	45.7
KC-760	5.2	0.1	2	0.080	0.44	1.37	0.11	0.06	1.29	2.1	25	122	130	0.93	7.5	47.1	15.5	26.4	5.02	< 0.1	2.9	< 0.1	5.9	42.0
KC-761	0.8	0.2	< 1	0.030	0.04	0.45	0.01	0.07	0.04	1.9	17	15.0	152	4.61	4.6	8.5	699	> 10000	5.15	0.1	548	1.5	0.5	3.3
KC-762	27.5	0.7	2	0.020	1.13	2.43	0.11	0.20	1.78	8.8	62	143	479	5.41	38.3	133	84.9	391	9.89	0.2	167	0.2	5.4	51.9

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Activation Laboratories Ltd. **Report: A11-7342 rev 2**

Analyte Symbol	Y	Zr	Nb	Mo	Ag	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.01	0.1	0.1	0.01	0.002	0.01	0.02	0.05	0.02	0.02	0.02	0.5	0.5	0.01	0.1	0.02	0.1	0.1	0.1	0.1	0.001	0.1	0.1	0.1
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
KC-755	13.7	52.7	0.8	11.5	2.13	4.25	0.38	3.18	0.84	0.10	0.33	25.6	4.5	12.2	1.5	5.74	1.5	1.3	1.9	0.3	2.25	0.5	1.4	0.2
KC-756	8.70	41.9	1.8	4.55	3.34	0.10	0.27	2.97	14.1	0.24	0.19	5.5	6.4	16.6	2.1	8.14	1.8	0.8	1.8	0.3	1.51	0.3	0.8	0.1
KC-757	8.84	28.0	0.3	0.71	0.059	0.04	0.03	0.76	0.13	< 0.02	0.60	19.6	9.1	20.5	2.4	9.07	1.8	0.5	1.8	0.3	1.45	0.3	0.8	0.1
KC-758	5.65	16.8	0.3	0.82	0.071	0.05	< 0.02	0.47	0.11	< 0.02	0.42	14.0	9.4	19.8	2.3	8.19	1.5	0.4	1.4	0.2	1.05	0.2	0.5	< 0.1
KC-759	13.3	9.5	0.6	1.78	0.084	0.19	0.04	1.39	0.47	0.03	0.80	84.8	30.8	62.9	7.5	26.1	4.6	1.0	3.8	0.5	2.52	0.5	1.3	0.2
KC-760	5.09	9.9	0.4	0.79	0.040	0.11	< 0.02	0.36	0.25	< 0.02	0.25	24.5	7.0	15.6	1.8	6.55	1.2	0.5	1.2	0.2	0.908	0.2	0.5	< 0.1
KC-761	1.83	9.0	0.6	1.93	14.5	192	6.10	1.84	2.88	< 0.02	0.04	12.0	2.3	6.11	0.6	2.44	0.5	0.2	0.5	< 0.1	0.401	< 0.1	0.2	< 0.1
KC-762	12.5	28.6	1.2	2.31	1.15	1.15	0.08	1.80	2.26	0.07	0.85	24.8	19.0	38.4	4.5	16.1	2.9	1.2	2.9	0.4	2.18	0.4	1.2	0.2

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Analyte Symbol	Yb	Lu	Hf	Ta	W	Re	Au	Tl	Pb	Th	U	As	Cu	Pb	Zn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm	%	%	%	%
Detection Limit	0.1	0.1	0.1	0.05	0.1	0.001	5	0.02	0.01	0.1	0.1	0.01	0.005	0.01	0.01
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	FUS-Na2O2	FUS-Na2O2	FUS-Na2O2	FUS-Na2O2
KC-755	1.5	0.2	1.3	< 0.05	1.5	0.018	14	0.55	126	3.4	0.8	< 0.01	0.027	0.01	0.11
KC-756	0.8	0.1	1.1	< 0.05	0.5	0.007	26	0.30	253	2.3	0.6	0.05	0.050	0.03	< 0.01
KC-757	0.7	0.1	0.5	< 0.05	0.3	< 0.001	6	0.07	8.92	1.8	0.3				
KC-758	0.5	< 0.1	0.3	< 0.05	0.4	< 0.001	< 5	0.04	14.8	1.5	0.3				
KC-759	1.1	0.2	< 0.1	< 0.05	0.4	0.002	5	0.10	19.0	15.0	6.0				
KC-760	0.4	< 0.1	0.2	< 0.05	0.3	< 0.001	< 5	0.04	9.57	1.4	0.3				
KC-761	0.2	< 0.1	0.2	< 0.05	0.3	< 0.001	6	< 0.02	4080	0.6	0.2	0.06	0.078	0.41	5.45
KC-762	1.0	0.1	0.8	< 0.05	0.4	0.002	20	0.46	107	2.1	0.4	0.02	0.008	0.01	0.05

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Quality Control

Analyte Symbol	Li	Be	B	Na	Mg	Al	K	Bi	Ca	Sc	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Rb	Sr
Unit Symbol	ppm	ppm	ppm	%	%	%	%	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.1	0.1	1	0.001	0.01	0.01	0.01	0.02	0.01	0.1	1	0.5	1	0.01	0.1	0.1	0.01	0.1	0.02	0.1	0.1	0.1	0.1	0.5
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
GXR-1 Meas	5.4	0.9	11	0.045	0.16	0.35	0.03	1410	0.80	1.2	76	11.4	789	22.5	8.6	43.6	1140	786	5.22		457	16.3	2.7	229
GXR-1 Cert	8.20	1.22	15.0	0.0520	0.217	3.52	0.0500	1380	0.960	1.58	80.0	12.0	852	23.6	8.20	41.0	1110	760	13.8		427	16.6	14.0	275
MICA-FE Meas																								
MICA-FE Cert																								
GXR-4 Meas	9.7	1.5	3	0.124	1.82	2.67	1.66	19.1	0.88	6.8	79	59.6	129	2.87	16.0	45.5	6320	92.6	12.4		118	4.9	116	87.1
GXR-4 Cert	11.1	1.90	4.50	0.564	1.66	7.20	4.01	19.0	1.01	7.70	87.0	64.0	155	3.09	14.6	42.0	6520	73.0	20.0		98.0	5.60	160	221
GXR-6 Meas	24.7	1.0	4	0.059	0.44	7.02	1.11	0.17	0.14	23.2	163	79.9	949	5.17	14.8	26.6	68.0	126	18.7		274	< 0.1	78.8	34.6
GXR-6 Cert	32.0	1.40	9.80	0.104	0.609	17.7	1.87	0.290	0.180	27.6	186	96.0	1010	5.58	13.8	27.0	66.0	118	35.0		330	0.940	90.0	35.0
LKSD-3 Meas																								
LKSD-3 Cert																								
DTS-2b Meas																								
DTS-2b Cert																								
GBW 07239 Meas																								
GBW 07239 Cert																								
GBW 07238 Meas																								
GBW 07238 Cert																								
BIR-1a Meas																								
BIR-1a Cert																								
NCS DC70014 Meas																								
NCS DC70014 Cert																								
MP-1b Meas																								
MP-1b Cert																								
MP-1b Meas																								
MP-1b Cert																								
DNC-1a Meas																								
DNC-1a Cert																								
OREAS 13b (4-Acid) Meas												426			58.1	2550	2410	86.3			71.7			
OREAS 13b (4-Acid) Cert												8650			75	2247	2300.000	133			57			
CCu-1d Meas																								
CCu-1d Cert																								
KC-761 Orig	0.8	0.1	< 1	0.032	0.04	0.44	0.01	0.07	0.04	2.0	17	14.6	150	4.54	4.5	8.6	697	> 10000	5.07	0.1	537	1.3	0.5	3.3
KC-761 Dup	0.8	0.2	< 1	0.028	0.04	0.46	0.01	0.07	0.04	1.9	17	15.3	155	4.68	4.6	8.5	701	> 10000	5.22	0.1	560	1.7	0.5	3.3
Method Blank Method Blank	< 0.1	< 0.1	< 1	< 0.001	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.1	< 1	< 0.5	< 1	< 0.01	< 0.1	< 0.1	< 0.01	< 0.1	< 0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5
Method Blank Method Blank																								
Method Blank Method Blank																								

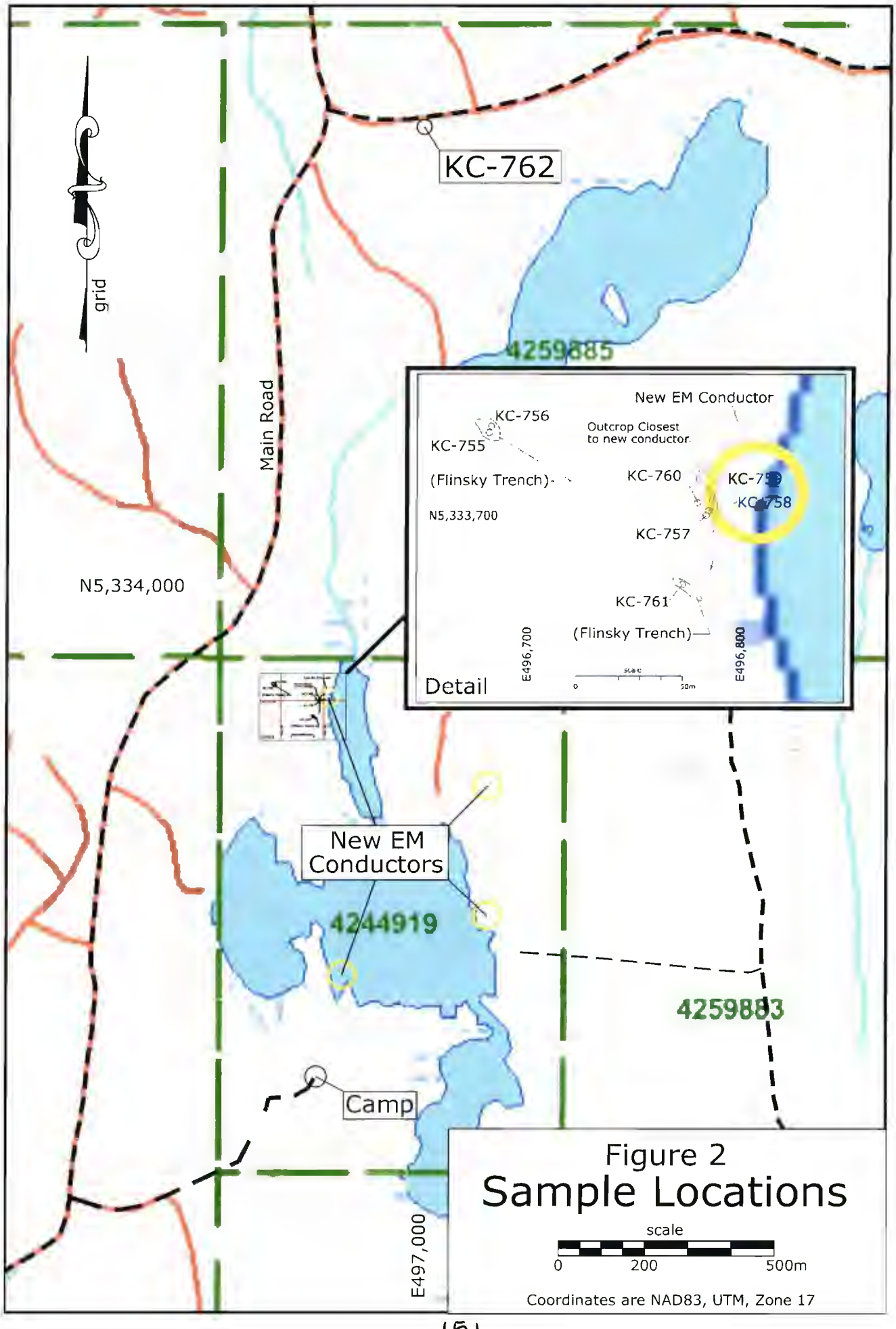
Quality Control

Analyte Symbol	Y	Zr	Nb	Mo	Ag	Cd	In	Sn	Sb	Te	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.01	0.1	0.1	0.01	0.002	0.01	0.02	0.05	0.02	0.02	0.02	0.5	0.5	0.01	0.1	0.02	0.1	0.1	0.1	0.1	0.001	0.1	0.1	0.1
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS
GXR-1 Meas	33.1	10.7	0.1	17.5	29.9	2.49	0.73	25.5	113	13.5	2.53	229	5.5	11.6		6.16	2.2	0.5	3.8	0.7	4.73			0.4
GXR-1 Cert	32.0	38.0	0.800	18.0	31.0	3.30	0.770	54.0	122	13.0	3.00	750	7.50	17.0		18.0	2.70	0.690	4.20	0.830	4.30			0.430
MICA-FE Meas																								
MICA-FE Cert																								
GXR-4 Meas	14.9	10.0	0.3	317	3.67	0.01	0.21	5.83	5.00	0.83	2.51	48.3	46.9	88.6		34.5	5.4	1.3	4.7	0.5	2.80			0.2
GXR-4 Cert	14.0	186	10.0	310	4.00	0.860	0.270	5.60	4.80	0.970	2.80	1640	64.5	102		45.0	6.60	1.63	5.25	0.360	2.60			0.210
GXR-6 Meas	8.25	14.0	< 0.1	1.74	0.295	0.10	0.06	0.98	2.83	0.05	3.79	888	11.3	32.5		11.2	2.3	0.6	2.2	0.3	1.64			0.1
GXR-6 Cert	14.0	110	7.50	2.40	1.30	1.00	0.260	1.70	3.60	0.0180	4.20	1300	13.9	36.0		13.0	2.67	0.760	2.97	0.415	2.80			0.0320
LKSD-3 Meas																								
LKSD-3 Cert																								
DTS-2b Meas																								
DTS-2b Cert																								
GBW 07239 Meas																								
GBW 07239 Cert																								
GBW 07238 Meas																								
GBW 07238 Cert																								
BIR-1a Meas																								
BIR-1a Cert																								
NCS DC70014 Meas																								
NCS DC70014 Cert																								
MP-1b Meas																								
MP-1b Cert																								
MP-1b Meas																								
MP-1b Cert																								
DNC-1a Meas																								
DNC-1a Cert																								
OREAS 13b (4-Acid) Meas				9.00	0.879																			
OREAS 13b (4-Acid) Cert				9.0	0.86																			
CCu-1d Meas																								
CCu-1d Cert																								
KC-761 Orig	1.80	8.9	0.5	1.88	14.6	193	6.07	1.82	2.86	< 0.02	0.04	11.6	2.4	6.07	0.6	2.46	0.5	0.2	0.5	< 0.1	0.407	< 0.1	0.2	< 0.1
KC-761 Dup	1.86	9.1	0.6	1.98	14.5	192	6.12	1.85	2.90	< 0.02	0.04	12.5	2.3	6.14	0.6	2.43	0.5	0.2	0.5	< 0.1	0.396	< 0.1	0.2	< 0.1
Method Blank Method Blank	< 0.01	< 0.1	< 0.1	< 0.01	< 0.002	< 0.01	< 0.02	< 0.05	< 0.02	< 0.02	< 0.02	< 0.5	< 0.5	< 0.01	< 0.1	< 0.02	< 0.1	< 0.1	< 0.1	< 0.1	< 0.001	< 0.1	< 0.1	< 0.1
Method Blank Method Blank																								
Method Blank Method Blank																								

Quality Control

Analyte Symbol	Yb	Lu	Hf	Ta	W	Re	Au	Tl	Pb	Th	U	As	Cu	Pb	Zn
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm	%	%	%	%
Detection Limit	0.1	0.1	0.1	0.05	0.1	0.001	5	0.02	0.01	0.1	0.1	0.01	0.005	0.01	0.01
Analysis Method	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	AR-MS	FUS-Na2O2	FUS-Na2O2	FUS-Na2O2	FUS-Na2O2
GXR-1 Meas	2.1	0.3	0.2	< 0.05	143		3240	0.36	736	2.2	31.2	0.04	0.117	0.08	0.08
GXR-1 Cert	1.90	0.280	0.960	0.175	164		3300	0.390	730	2.44	34.9	0.0427	0.111	0.0730	0.0760
MICA-FE Meas												< 0.01	< 0.005	< 0.01	0.14
MICA-FE Cert												0.000300	0.000500	0.00130	0.130
GXR-4 Meas	0.8	0.1	0.3	< 0.05	11.5		387	2.87	48.1	18.4	4.8				
GXR-4 Cert	1.60	0.170	6.30	0.790	30.8		470	3.20	52.0	22.5	6.20				
GXR-6 Meas	0.8	0.1	0.2	< 0.05	< 0.1		35	1.89	106	4.2	0.9				
GXR-6 Cert	2.40	0.330	4.30	0.485	1.90		95.0	2.20	101	5.30	1.54				
LKSD-3 Meas												< 0.01	< 0.005	< 0.01	0.02
LKSD-3 Cert												0.00270	0.00350	0.00290	0.0152
DTS-2b Meas													< 0.005	< 0.01	< 0.01
DTS-2b Cert													0.000300	0.000400	0.00450
GBW 07239 Meas												< 0.01	< 0.005	0.02	0.01
GBW 07239 Cert												0.000100	0.00486	0.00260	0.0120
GBW 07238 Meas												< 0.01	0.011	< 0.01	< 0.01
GBW 07238 Cert												0.000160	0.00936	0.00187	0.00655
BIR-1a Meas												< 0.01	0.012	< 0.01	< 0.01
BIR-1a Cert												0.00	0	0	0
NCS DC70014 Meas												0.77	0.259	2.67	0.73
NCS DC70014 Cert												0.79	0.26	2.72	0.74
MP-1b Meas												2.61	3.33	2.24	17.9
MP-1b Cert												2.30	3.069	2.091	16.67
MP-1b Meas												2.35	3.01	2.05	16.2
MP-1b Cert												2.30	3.069	2.091	16.67
DNC-1a Meas													0.011		< 0.01
DNC-1a Cert													0.0100		0.00700
OREAS 13b (4-Acid) Meas															
OREAS 13b (4-Acid) Cert															
CCu-1d Meas													22.7	0.26	2.59
CCu-1d Cert													23.93	0.262	2.63
KC-761 Orig	0.2	< 0.1	0.2	< 0.05	0.3	< 0.001	6	< 0.02	4150	0.7	0.2				
KC-761 Dup	0.2	< 0.1	0.2	< 0.05	0.3	< 0.001	5	< 0.02	4000	0.5	0.2				
Method Blank Method Blank	< 0.1	< 0.1	< 0.1	< 0.05	< 0.1	< 0.001	< 5	< 0.02	< 0.01	< 0.1	< 0.1				
Method Blank Method Blank												< 0.01	< 0.005	< 0.01	< 0.01
Method Blank Method Blank												< 0.01	< 0.005	< 0.01	< 0.01

150


KC-762
grid
Main Road
4259885
N5,334,000
New EM Conductor
KC-756
Outcrop Closest
to new conductor
KC-755
(Flinsky Trench)
KC-760
KC-759
KC-758
N5,333,700
KC-757
KC-761
(Flinsky Trench)
E496,700
E496,800
Detail
New EM
Conductors
4244919
4259883
Camp
E497,000
Figure 2
Sample Locations
scale
0
200
500m
Coordinates are NAD83, UTM, Zone 17

Author: Kevin Cool Revised Sept, 2010 *Date corrected from previous version: Rev1Dec28/2008*

Qualifications and Experience

1982 Graduated from Timmins High and Vocational School

1983 Studied photography at Humber College, Toronto, Ontario

1984 to 1988 Worked for family owned transportation business in Moosonee, Ontario

1988 to 1990* Studied Survey at Northern College, South Porcupine, Ontario

1990* Graduated with Survey Engineering Technician Diploma

1990* to 2001

Owned and operated General Surveys and Exploration based in Timmins, Ontario. The company provided contract survey, computer and information management services to the exploration and mining industry. Software includes Acad, Gemcom and Surpac, with specialization in using computers for the mining and exploration industry.

Work included volumetric survey of land areas to be used as tailing basins, where computerized 3D models were utilized. Diamond drillhole, underground engineering and mechanical design/construction surveys were common contracts for mining and exploration companies. Significant accomplishments include the design and construction of the 110km winter road from Attawapiskat to the Victor Project.

Clients included;

DeBeers Canada Exploration (Monopros), Southernera Resources, Dome Exploration, Placer Dome Detour Lake, Musselwhite and Dome Mines, Exall Glimmer Mine, Claude Rundle Gold Mine, TVX Mines' projects in Northern Greece, Moneta Porcupine Mines, Black Pearl Minerals, St. Andrew Goldfields, Battle Mountain Gold, Pentland Firth, Kinross Gold, Band-Ore Resources, McKinnon Prospecting and many other companies and individual prospectors.

2000 to 2005

Began collaborative work with Brian K. Polk (Polk Geological Services) and established a private exploration company called Big Red Diamond Company. This small company began to stake property near Attawapiskat and Coral Rapids. Eventually the survey business was put aside to focus full time on diamond exploration.

Big Red Diamond Company entered into a Joint Venture with a private company owned by Dr. Charles Fipke of Kelowona, B.C. on a group of properties near DeBeers' Victor Project in the Attawapiskat region. Dr. Fipke is the renowned geologist who found Canada's first diamond mine, the Ekati Mine in Northwest Territories.

continued

Since 2001 the author has been exposed to all aspects of diamond exploration including;

Claim staking, field work, camp construction, airborne and ground magnetometer survey, planning and management of large scale geophysical programs, planning, management and interpretation of regional and property scale sampling programs.

Exposure to the industry includes training and field work under the discretion of Dr. Fipke. Introduction to kimberlite mineral identification from Dr. Fipke was expanded by personal research and study, which continues to current and lead to the establishment of True North Mineral Laboratories in Timmins, Ontario.

Advanced analysis, beyond the stage of heavy mineral separation, or observation using binocular microscope, is handled by other certified analytical laboratories, such as *CF Minerals*, of Kelowona, B.C.

2002

Big Red Diamond Company became a publicly traded corporation.

The author is one of the co-founders of Big Red Diamond Corporation, which trades on the TSX Venture Exchange under the symbol DIA.

The author continues to actively stake mining claims and process sample material for private and public companies.

2005 to 2009

Established True North Mineral Laboratories, at 475 Railway Street, Timmins, Ontario and added Actlabs-Timmins in early 2006. Lab processes, equipment setup and procedures are now supervised by Actlabs, based in Ancaster, Ontario.

The management and employees of True North Mineral Laboratories / Actlabs-Timmins, receive ongoing support and training directly from Actlabs - Ancaster. The laboratory processes fall under Actlabs certification, providing analysis is carried out by the main facility in Ancaster. In this capacity, True North Mineral Laboratories acts as a preparation facility for Actlabs and is qualified to handle material preparation prior to direct analysis by Actlabs.

2009 to current

Sold prep facility to Cattarello Assayers Inc., who now operate a gold fire assay facility at 475 Railway Street, Timmins. True North Mineral Laboratories opened a small, private facility at 68 Bruce Avenue, South Porcupine in early 2011.

True North Mineral Laboratories utilizes the services of Actlabs and CF Mineral Research, for projects where an accredited laboratory is required. True North Mineral Laboratories continues to offer a wide range of field services to the exploration Industry.

TRUE NORTH MINERAL LABORATORIES

68 Bruce Avenue
South Porcupine ON
Phone (705) 264-0812

Report Completion Date:

November 30, 2011