ET Regional Program (Conservative Ridge Moose Creek Reverse Creek area)

# NTS 115P/7-10 Latitude 63°31'N Longitude 136° 28'W

## **Mayo Mining Division**

Work performed between September 4-6, 2009

For Ralph Keefe P.O. Box 201 Francois Lake, British Columbia V0J 1R0

Ken Galambos, P.Eng. KDG Exploration Services 1535 Westall Ave. Victoria, British Columbia V8T 3G6

March 20, 2010

#### EXECUTIVE SUMMARY

The ET Regional program was conducted under the Yukon Mining Incentives Program focused regional module. The program was successful in identifying anomalous stream drainages in the area. It was however severely hampered by the lack of water and suitable material to sample. The idea behind the project is considered to remain sound but the timing and execution of future programs is critical to its success. It is the applicant's opinion that late spring or very early summer in when any future attempts should be made. There needs to be snow in the higher elevations to provide water for transporting the fine silt to be sampled. The area must also be accessed by foot as few suitable helicopter landing sites were located in the area.

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#### CHAPTER 1: INTRODUCTION

#### **1.1 Introductory Statement**

The ET Regional project was planned and executed to test the merit of further exploration east of the U slough area of the Stewart River. Creeks in the area have been found to host fine gold as has been mined on the Stewart River for more than a century. It is the author's belief that the gold found in these creeks is sourced from bedrock mineralization that is hosted in a Carlin or a more intimate Intrusion related setting.

#### **1.2 Location and Access**

The Conservative Ridge/Moose Creek area lies to the north of the ET claims owned by the estate of prospector John Peter Ross. The centre of the area lies approximately 20 km NE of the community of Stewart Crossing Yukon. Access into the southern and eastern sides of the project area would be by ATV on existing trails and then by foot. The western and northern regions need to be accessed by helicopter based out of Mayo or by foot with a helicopter pickup once appropriate landing sites are established.

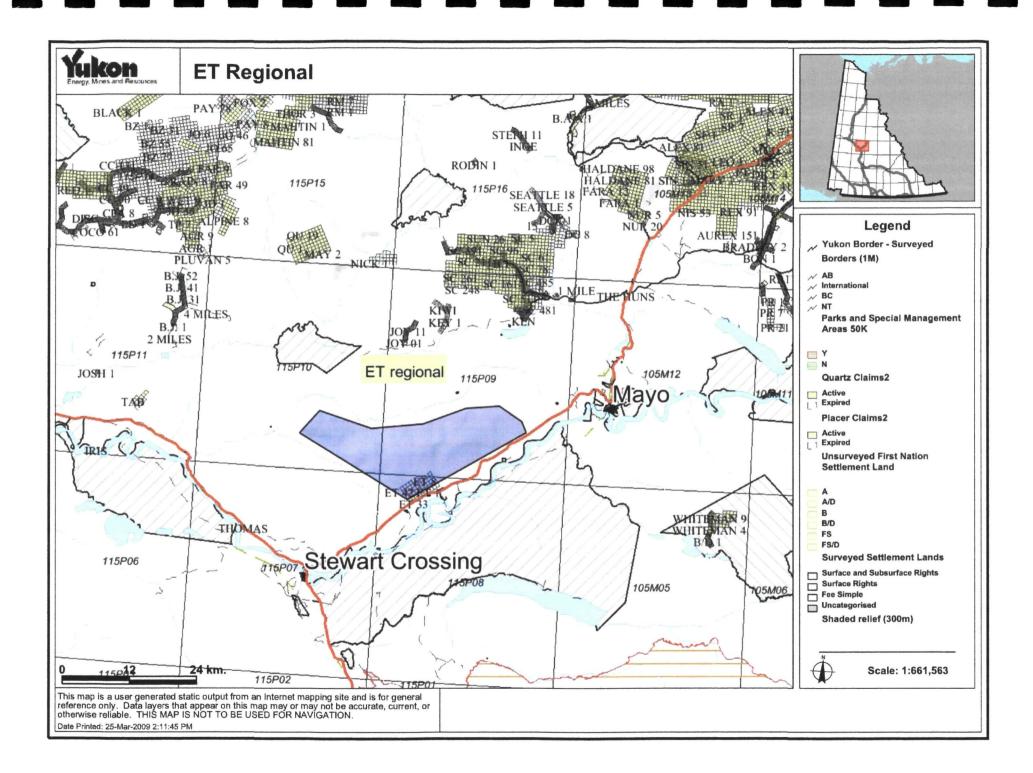
#### **1.3 Physiography and Vegetation**

The project area is located in the southern reaches of the Ogilvie Mountains in an area partially glaciated by the Reid (Nistling) advance and as is affected by discontinuous permafrost. South facing slopes are covered with open mixed forest comprised of aspen, poplar and birch and widely spaced coniferous trees. Steep north-facing slopes and narrow valley floors are covered with thick blankets of moss with thickets of slope alder and stunted spruce. Valley bottoms are soggy muskeg swamps. Flowing creeks are minimal in the lowlands.

#### 1.4 Area History

Fine placer gold has been mined from gravel bars in the Stewart River since the early days of the Klondike Gold Rush and early prospectors traced the placer gold upstream from what later became Stewart Crossing. The source for this gold has never been found. A well known prospector from Mayo by the name of Louis Brown staked placer claims on a tributary of Moose Creek which was later identified to have anomalous gold concentrations from RGS surveys. This is on the opposite side of a small mountain to John Peter Ross's ET property.

In 1990, Noranda Exploration Ltd. (NPL) conducted a regional bulk silt program which collected and analyzed -200 mesh sized material from most of the creeks and rivers that crossed the Yukon road system. The survey identified three target areas anomalous for gold and base metals. These areas received only minor additional follow up by the company. Two creeks in the U Slough area on the Silver Trail Highway returned highly anomalous values for gold whereas the same creeks showed only weakly anomalous to non-anomalous results in the -80 mesh fraction collected as part of the1987 RGS (GSC OF 1650) survey. The



company conducted a one day prospecting and sampling program on the mountain above the creeks. This program was severely hampered by the presence of thick loess cover in the higher elevations. Despite this, a number of anomalous soil samples were located but not followed up on. (personal com. Jesse Duke, Acting District Geologist at that time for Noranda Exploration)

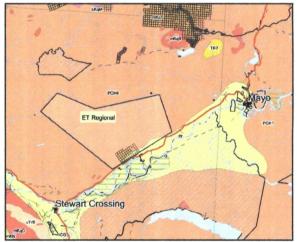
Further exploration by Ken Galambos in 1992-94 expanded the anomalous area to three creeks which returned highly anomalous values of 124 ppb Au, 102 ppb Au, 273 ppb Au in -200 mesh silt samples and 103 ppb Au, 2665 ppb Au, 1438 ppb Au in pan concentrate samples. Exploration conducted by John Peter Ross returned highly anomalous results from eight samples in the same area which included 175 ppb Au to 2550 ppb Au in the -80 mesh fraction and from 1550 ppb Au to 5570 ppb Au (with a weak As, Ba association?) in the -200 mesh fraction of the stream sediments. A bedrock source has yet to be identified.

#### CHAPTER 2: GEOLOGY 2.1 Regional Geology

The area has been mapped as graphitic phyllite and quartzite of the Hadrynian aged Hyland Group. These rocks are bounded to the south west by the Tintina Trench, a large Tertiary strike-slip fault system. Lower Cretaceous aged monzonite, granodiorite and alaskite intrude the area as small stocks and plugs including a few small felsic intrusions south-west of Reverse Creek.

The units as described from the Yukon Geological Survey website are as follows.

**mKqS: (Selwyn Suite)** plutonic suite of more felsic composition (q) complete compositional gradation so that these designations are somewhat arbitrary equigranular to porphyritic (K-feldspar) biotite +/- hornblende +/- muscovite granite, quartz monzonite and



granodiorite; porphyritic biotite hornblende granite

**PCH: (Hyland Gp.)** consists upwards of coarse turbiditic clastics (1); quartzose clastic rocks as described in (1); mostly (?) equivalent to (1) but may include younger units **(Hyland Gp., mostly(?) Yusezyu)** (4)

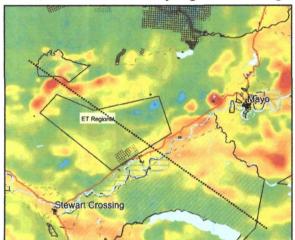
#### 2.2 Structural Geology

Linear analysis of the area in the past by the author and subsequent claim holders suggests the presence of a number of large linear features suggested by both magnetic data and air photo interpretation. One such linear is shown on the Regional Magnetic map below.

#### **CHAPTER 3: Geophysics**

#### 3-1 Regional Geophysics

The intrusions present in the area, such as those at Scheelite Dome and Minto Lake, do not exhibit any significant magnetic signature. The magnetic profile of

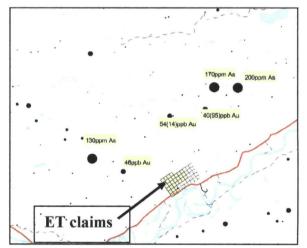


the target area is relatively flat with the exception of a few magnetic highs in the Moose Creek and Liberal Ridge areas. The shape of the magnetic feature in the Moose Creek drainage suggests the hinge of a fold of a magnetic body or an offset to the magnetic body by approximately 5km to the east. This same structure may be responsible for linear magnetic features immediately north of Ethel lake, due south of Mayo.

#### **CHAPTER 4: Geochemistry**

#### 4-1 Regional Geochemistry

The results of sampling the creeks for -80 mesh silt hints that there may be gold related bedrock mineralization present. A Regional Geochemical survey by the Geological Survey of Canada (GSC OF 1650) shows low level anomalous values in arsenic and gold throughout the target area. Of note, are two creeks which flow northward into the upper Moose Creek drainage. These returned values of 54 (14) and 40 (95) ppb Au. Repeat analysis are shown in parentheses. Creeks to the east returned highly



anomalous values of 170 and 200ppm As and on the south west side of the target area, two creeks returned values of 46ppb Au and 130ppm As respectively. The creeks covered by the present ET claims do not show any indication of containing any gold from the -80 mesh sampling.

Bulk sampling by Noranda, the author and by J. Peter Ross in which the -200 or - 270 mesh material was collected and analyzed show the immediate claim area to

be highly anomalous in gold. Exploration by Ken Galambos in 1992-94 expanded the anomalous area to three creeks which returned highly anomalous values of 124 ppb Au, 102 ppb Au, 273 ppb Au in -200 mesh silt samples and 103 ppb Au, 2665 ppb Au, 1438 ppb Au in pan concentrate samples. Very fine gold flakes were noted in a number of the pan concentrate samples collected. Exploration conducted by John Peter Ross also returned highly anomalous results from eight samples in the same area which included 175 ppb Au to 2550 ppb Au in the -80 mesh fraction and from 1550 ppb Au to 5570 ppb Au (with a weak As, Ba association?) in the -200 mesh fraction of the stream sediments.

#### CHAPTER 5: MINERALIZATION

No bedrock mineralization has been located by any of the exploration programs to date. There is a fair accumulation of recent calcium deposition in the creeks covered by the ET property. This exists primarily as fragments and cobbles of calcium cemented organic matter including leaf and twig material. At least one creek hosts insitu beds of similar material.

#### CHAPTER 6: 2009 WORK PROGRAM

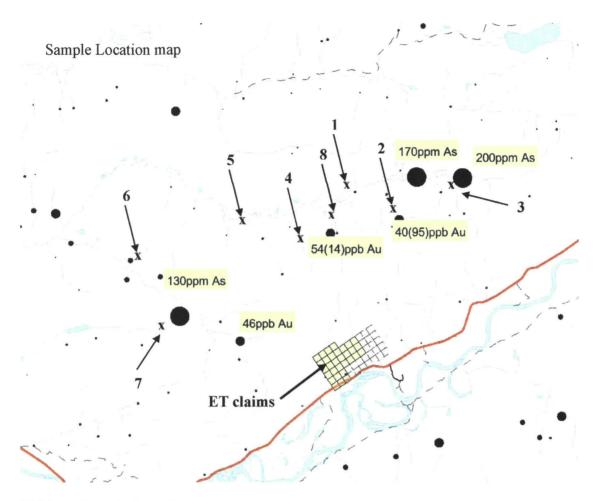
#### 6.1 Geochemical Sampling Program

Initial sampling of the selected creeks was to involve the collection and analysis of the -200 or -270 mesh fraction of silt to identify any anomalous drainages. Silt samples were to be prescreened at each sight to minimize sample size and to ensure that enough fine sediment was collected. The first phase of bulk sampling program was to have sampled approximately 25 creeks in the project area. Once any anomalous drainages were identified, further prospecting, mapping and the collection of fine sediment was to be conducted in an effort to narrow down the source for the anomalous material. Any mineralized float or outcrop located would also be sampled during the follow up programs.

#### 6.2 Work Program

The first phase of bulk sampling resulted in the collection of only 8 samples from the day long program. Extensive brush and pervasive swamp resulted in the helicopter being able to land safely in only a few locations. These landing sites often required hiking to each proposed sample site, which often turned out to be lacking in any silt. Often only organic material was present in dry creek beds or the creek existed as an underground stream and any sediment present was subsequently unavailable for sampling. Only minor amounts of sediment were located in program and any available fine silt was collected for later processing.

Initial sampling involved the collection of -8 mesh material if possible. This material was placed in large plastic sample bags, sealed with flagging tape and labeled with an appropriate sample number. GPS coordinates were collected for each successful sample site.



#### Table 1 Sample Locations

Sample Number	Latitude	Longitude
1	63° 36.140'	136° 18.963'
2	63° 34.909'	136° 23.180'
3	63° 34.826'	136° 24.993'
4	63° 34.137'	136° 28.367'
5	63° 33.920'	136° 32.872'
6	63° 32.180'	136° 42.747'
7	63° 30.576'	136° 37.753'
8	63° 34.750'	136° 23.125'

#### 6.3 Sample Preparation and Assay Procedures

The bulk silt samples were transported to a secure facility for further processing. This involved the wet screening of the entire sample to obtain the -200 mesh fraction. This material was collected, re-bagged into smaller sample bags and labeled with its appropriate sample number. The eight silts were transported to Burns Lake, BC where they were shipped via Greyhound Bus lines to ACME Analytical in Vancouver for analysis. At the laboratory, the silt samples were dried at 60 degrees Celsius and analyzed by Aqua Regia digestion Ultratrace ICP-MS analysis method 1F02 using a 15g split. The pulps and rejects were stored for 90 days and then discarded. Laboratory Method Specifications are located in Appendix B.

#### CHAPTER 7: Results

#### 7.1 Geochemical Results

The results of the sampling program were generally disappointing with only one sample containing anomalous concentrations of gold. Sample 5 contained 47.9ppb Au and a weak tungsten anomaly and was located two creeks to the west of the one identified in the RGS survey as containing 54 (14) ppb Au. Two other creeks contained weak arsenic and other pathfinder anomalies. The creek identified with sample 6 showed anomalous values of manganese, arsenic, strontium, phosphorous and barite. Sample 1 returned weakly anomalous values for arsenic. Full results can be viewed in Appendix A.

#### CHAPTER 8: INTERPRETATION AND CONCLUSIONS

Results of the fine silt sampling program are reflective of the available material to be collected at each of the successful sample sites. The number of sample locations where fine silt was collected was reduced to eight from the twenty-five that were planned due to the lack of available helicopter landing sites. The quality of sediment collected in some instances was suspect in that these samples contained a high organic content. Despite these drawbacks, anomalies were produced on a number of creeks that previously were not shown to host gold or pathfinder elements. These anomalies are widespread and suggest either the presence of a very large mineralized system or a number of smaller systems.

It is the applicant's opinion that the area is still of interest and the program still viable with modifications to both the timing and execution. Any future attempts need to be completed in the late spring or early summer while there is still a snow pack at higher elevations to provide the necessary water to carry the fine silt collected to an accessible sampling site. Due to the heavy brush present over most of the area, the program will need to be attempted either on foot or ATV. Helicopter landing sites should be cut at appropriate locations to facilitate follow-up surveys and prospecting programs that may be warranted.

#### CHAPTER 9: RECOMMENDATIONS AND BUDGET

The program to evaluate the entire ET Regional area has not been accomplished to date. In order to do so, a program of land based access into the area must be attempted. To duplicate the program as originally planned sampling must be attempted at a higher elevation. Initial sampling of the creeks will involve the collection and analysis of the -200 mesh fraction of creek silt to identify any

anomalous drainages. The Phase 1 program of bulk sampling would entail the collection and analysis of approximately 25 samples from the creeks in the project area. Once any anomalous drainages are identified, further prospecting, mapping and the collection of fine sediment will be conducted in an effort to narrow down the source for the anomalous material and would require another dozen or more samples. Any mineralized float or outcrop would also be sampled during the second phase of exploration. Upon receipt of the second set of results, claims would possibly be staked over the source area and if time and budget allowed, further prospecting, geological, geophysical, geochemical surveys would be attempted. Depending on the results obtained and the availability of funds from other sources (optioning companies etc.) trenching and/or drilling would be conducted to determine the economics of any mineralization located.

A Phase 1 budget should include the following:

Prospector/sampler, 14 days at \$400 per day	\$5600
Assistant, 14 days at \$200/day	\$2800
Camp and supplies, 28 person days at \$50 per day	\$1400
Truck rental, 16 days at \$160 per day plus km	\$3100
ATV rental, 16 days at \$150 per day x2	\$4800
Sample analysis 25 samples at \$25 per sample	\$ 625
Report preparation	\$2000
Contingency of 15%	\$2975
	Phase 1 Total \$23300

A follow up Phase 2 budget should be approximately the same but work would be confined into a smaller area in an effort to locate an economic bedrock source to the fine gold found in the creeks. Subsequent to the location of mineralized bedrock or a possible source area, grid geochemical and geophysical surveys, mechanized trenching and or drilling will be required.

#### References

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Radtke, A.S., Rye, R.O. and Dickson, F.W. (1980): Geology and Stable Isotope Studies of the Carlin Gold Deposit, Nevada; Economic Geology, Volume 75, pages 641-672.

**Schroeter, T.G. (1986)**: Muddy Lake Project, in Geological Fieldwork, 1985, B. C. Ministry of Energy, Mines and Petroleum Resources, Paper 1986-1, pages 175-183.

#### **CERTIFICATION, DATE AND SIGNATURE**

1) I, Kenneth Daryl Galambos of 1535 Westall Avenue, Victoria, British Columbia am self-employed as a consultant geological engineer, authored and am responsible for this report entitled "ET Regional program (Conservative Ridge - Moose Creek - Reverse Creek area)", dated March 20, 2010.

2) I am a graduate of the University of Saskatchewan in Saskatoon, Saskatchewan with a Bachelors Degree in Geological Engineering (1982). I began working in the mining field in 1974 and have more than 26 years mineral exploration and production experience, primarily in the North American Cordillera. Highlights of this experience include the discovery and delineation of the Brewery Creek gold deposit, near Dawson City, Yukon for Noranda Exploration Ltd.

3) I am a registered member of the Association of Professional Engineers of Yukon, registration number 0916 and have been a member in good standing since 1988.

4) I have visited the subject mining property of this report and am a "Qualified Person" in the context of and have read and understand National Instrument 43-101 and the Companion Policy to NI 43-101.

5) This report is based upon the author's personal knowledge of the region and a review of additional pertinent data.

6) As stated in this report, in my professional opinion the property is of potential merit and further exploration work is justified.

7) To the best of my knowledge this report contains all scientific and technical information required to be disclosed so as not to be misleading.

8) I am partners with Ralph Keefe on a number of properties in the Babine/Takla Lakes and other areas of British Columbia and Nines Creek in Yukon. My professional relationship is as a non-arm's length consultant, and I have no expectation that this relationship will change.

9) I consent to the use of this report by Ralph Keefe for such assessment and/or regulatory and financing purposes deemed necessary, but if any part shall be taken as an excerpt, it shall be done only with my approval.

Dated at Victoria British Columbia this 20<sup>th</sup> day of March, 2010. "Signed and Sealed"

916 UKOÁ

Ken Galambossi REEnga (APEY Reg. No. 0916) KDG Exploration Services 1535 Westall Ave Victoria, British Columbia V8T 3G6

# Appendix A

**Assay Results** 

# **Acme**Labs

**Client:** 

Keefe, Ralph R. Box 201 Francois Lake BC V0J 1R0 Canada

VAN09004273.1

Test

15

Wgt (g)

Report

Status

Completed

Lab

VAN

VAN

VAN

Acme Analytical Labo

1020 Cordova St. East Vancouver BC V6A 4A3 Canada Phone (604) 253-3158 Fax (604) 253-1716

oratories	(Vancouver)	Ltd.	5
			f

Number of

Samples

8

8

8

**ADDITIONAL COMMENTS** 

Submitted By: Ralph R. Keefe Receiving Lab: Canada-Vancouver Received: September 16, 2009 Report Date: September 28, 2009 Page: 1 of 2

1:1:1 Aqua Regia digestion Ultratrace ICP-MS analysis

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Method

Code

SS80

1F02

Dry at 60C

### CERTIFICATE OF ANALYSIS

#### SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

**Code Description** 

Dry at 60C

Dry at 60C sieve 100g to -80 mesh

Project	None Given	
Shipment ID:		
P.O. Number		
Number of Samples:	8	

#### SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days DISP-RJT Dispose of Reject After 90 days

**CLIENT JOB INFORMATION** 

Acme does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To:

Keefe, Ralph R. Box 201 Francois Lake BC V0J 1R0 Canada

CC:

K. Galambos



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\*\*\* asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements,

# AcmeLabs

CEDTIFICATE OF ANALVOID

Client:

Keefe, Ralph R. Box 201 Francois Lake BC V0J 1R0 Canada

VAN00004072

Project: Report Date:

None Given

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September 28, 2009

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CERII	CERTIFICATE OF ANALYSIS VANU9U04273.1																					
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	Analy	te	Мо	Cu	Pb	Zn	Ag	NI	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	v	Ca	Р
	U	nit p	pm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MI	DL 0	.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0,1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
1	Silt	0	.72	12.59	6.38	63.2	40	17.8	8.3	894	2.36	28.2	0.8	2.9	4.5	28.6	0.18	0.55	0.10	18	0.33	0.070
2	Silt	0	.56	16.91	7.93	52.8	76	18.2	8.7	430	1.80	7.4	1.1	1.6	5.4	18.1	0.16	0.98	0.14	18	0.21	0.054
3	Silt	0	.49	14.24	6.01	55.3	46	17.6	7.1	544	1.96	17.7	0.7	1.6	4.2	28.2	0.20	0.73	0.10	17	0.36	0.065
4	Silt	0	.55	11.94	6.11	44.8	46	13.6	4.9	113	1.30	5.6	0.7	1.1	3.8	19.8	0.13	0.65	0.10	18	0.22	0.056
5	Silt	0	.47	15.46	6.39	46.4	28	17.3	7.4	189	2.38	13.5	0.7	47.9	5.9	18.4	0.08	0.45	0.10	21	0.27	0.072
6	Silt	0	.46	8.92	4.93	38.0	29	12.9	5.3	1138	2.28	26.7	0.5	2.7	4.1	57.2	0.07	0.44	0.08	18	0.57	0.133
7	Silt	0	.65	19.86	7.26	52.1	55	19.9	9.5	647	1.86	8.1	0.7	2.8	3.6	38.6	0.18	0.52	0.10	26	0.51	0.088
8	Silt	0	.49	13.77	7.59	44.8	51	13.4	5.8	123	1.52	5.4	1.2	3.6	6.7	21.6	0.11	0.40	0.14	18	0.23	0.056

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Report Date:

September 28, 2009

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Part 2 2 of 2

# CERTIFICATE OF ANALYSIS

	1	Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
	1	Analyte	La	Cr	Mg	Ba	Ti	в	AI	Na	к	w	Sc	TI	S	Hg	Se	Te	Ga
		Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm
		MDL	0,5	0.5	0.01	0.5	0.001	1	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1
1	Silt		15.1	12.0	0.25	268.5	0.013	1	0.61	0.004	0.05	0.2	1.4	0.04	< 0.02	27	0.4	< 0.02	1.7
2	Silt		17.8	13.2	0.26	156.7	0.012	<1	0.71	0.003	0.04	0.1	1.5	0.05	< 0.02	22	0.2	<0.02	1.8
3	Silt		12.7	11.2	0.26	232.7	0.011	<1	0.57	0.004	0.04	0.1	1.3	0.04	0.03	22	0.6	<0.02	1.5
4	Silt		12.4	10.4	0.23	187.4	0.015	<1	0.54	0.004	0.03	0.2	1.3	0.03	< 0.02	27	0.2	<0.02	1.6
5	Silt		21.2	16.8	0.35	107.4	0.023	<1	0.78	0.003	0.04	0.9	1.2	0.04	< 0.02	21	0.1	0.04	2.1
6	Silt		13.9	11.5	0.26	319.2	0.016	<1	0.52	0.004	0.04	0.2	1.1	0.03	0.02	18	0.3	0.04	1.6
7	Silt		13.5	20.7	0.37	201.9	0.020	<1	0.83	0.005	0.05	0.3	1.9	0.04	0.04	25	0.4	<0.02	2.4
8	Silt		23.7	12.4	0.28	172.9	0.017	<1	0.65	0.004	0.03	0.4	1.2	0.03	< 0.02	11	0.2	<0.02	2.0

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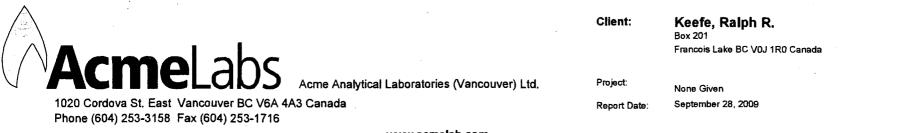


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	Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
	Analyte	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	BI	v	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm ·	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0,5	0.01	0.02	0.02	2	0.01	0.001
<b>Reference Materials</b>						1.1															
STD DS7	Standard	21.54	116.4	73,10	392.2	808	56.3	9.6	635	2.48	50.7	5.0	69,5	4.8	77.8	6.33	5,89	4.72	84	1.01	0.078
STD DS7 Expected		20.5	109	70.6	411	890	56	9.7	627	2.39	48.2	4.9	70	4.4	68.7	6.38	4.6	4.51	84	0.93	0.08
BLK	Blank	<0.01	<0.01	<0.01	<0.1	<2	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01	<0.001



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Part 2

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#### QUALITY CONTROL REPORT

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Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
Analyte	La	Cr	Mg	Ва	Tł	· B	AI	Na	к	W	Sc.	п	S	Hg	Se	Те	Ga
Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	<b>pp</b> m	%	ppb	ppm	ppm	ppm
MDL	0.5	0,5	0.01	0.5	0.001	1	0.01	0.001	0,01	0,1	0.1	0.02	0.02	5	0.1	0.02	0.1
																	1
Standard	14.2	221.9	1.07	406.1	0.128	39	1.09	0.103	0.47	3.8	2.7	4,02	0.20	179	3.3	1.04	4.7
	11.7	179	1.05	370.3	0.124	38.6	0.959	0.089	0.44	3.4	2.5	4.19	0.19	200	3.5	1.08	4.6
Blank	<0.5	<0.5	<0.01	<0.5	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1
	Analyte Unit MDL Standard	Analyte La Unit ppm MDL 0.5 Standard 14.2 11.7	Analyte La Cr Unit ppm ppm MDL 0.5 0.5 Standard 14.2 221.9 11.7 179	Analyte  La  Cr  Mg    Unit  ppm  ppm  %    MDL  0.5  0.5  0.01    Standard  14.2  221.9  1.07    11.7  179  1.05  1.05	Analyte  La  Cr  Mg  Ba    Unit  ppm  ppm  %  ppm    MDL  0.5  0.5  0.01  0.5    Standard  14.2  221.9  1.07  406.1    11.7  179  1.05  370.3	Analyte  La  Cr  Mg  Ba  Ti    Unit  ppm  ppm  %  ppm  %    MDL  0.5  0.5  0.01  0.5  0.001    Standard  14.2  221.9  1.07  406.1  0.128    11.7  179  1.05  370.3  0.124	Analyte  La  Cr  Mg  Ba  Ti  B    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm    MDL  0.5  0.5  0.01  0.5  0.001  1    Standard  14.2  221.9  1.07  406.1  0.128  39    11.7  179  1.05  370.3  0.124  38.6	Analyte  La  Cr  Mg  Ba  Ti  B  Ai    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm  %    MDL  0.5  0.5  0.01  0.5  0.001  1  0.01    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09    11.7  179  1.05  370.3  0.124  38.6  0.959	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na    Unit  ppm  ppm  %  ppm  %  ppm  %  %    MDL  0.5  0.5  0.01  0.5  0.001  1  0.01  0.001    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %    MDL  0.5  0.5  0.01  0.5  0.001  1  0.01  0.001  0.01    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103  0.47    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089  0.44	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm  %  ppm  %  %  ppm    MDL  0.5  0.5  0.01  0.5  0.001  1  0.01  0.01  0.1    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103  0.47  3.8    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089  0.44  3.4	Analyte  La  Cr  Mg  Ba  Ti  B  Al  Na  K  W  Sc    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  ppm  %  %  %  %  ppm  ppm  ppm  % <td< td=""><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  ppm  ppm  ppm  %  %  %  %  ppm  ppm  ppm  %  <t< td=""><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  %  %  %  ppm  ppm  %</td><td>Analyte  La  Cr  Mg  Ba  Ti  B  Al  Na  K  W  Sc  Ti  S  Hg    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppb  ppm  %  ppm  %  %  %  %  ppm  ppm  ppm  %  ppb   0.01  0.01  0.01  0.01  0.02  0.02  5    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103  0.47  3.8  2.7  4.02  0.20  179    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089  0.44  3.4  2.5  4.19  0.19  200</td><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  %  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  pph  ppm  %  %  %  %  ppm  ppm  %  pph  ppm  %  %  %  %  %  %  ppm  ppm  %<!--</td--><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se  Te    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  ppm  %  0.02  0.02  0.02  5  0.1  0.02   </td></td></t<></td></td<>	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti    Unit  ppm  ppm  %  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  ppm  ppm  ppm  %  %  %  %  ppm  ppm  ppm  % <t< td=""><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  %  %  %  ppm  ppm  %</td><td>Analyte  La  Cr  Mg  Ba  Ti  B  Al  Na  K  W  Sc  Ti  S  Hg    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppb  ppm  %  ppm  %  %  %  %  ppm  ppm  ppm  %  ppb   0.01  0.01  0.01  0.01  0.02  0.02  5    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103  0.47  3.8  2.7  4.02  0.20  179    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089  0.44  3.4  2.5  4.19  0.19  200</td><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  %  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  pph  ppm  %  %  %  %  ppm  ppm  %  pph  ppm  %  %  %  %  %  %  ppm  ppm  %<!--</td--><td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se  Te    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  ppm  %  0.02  0.02  0.02  5  0.1  0.02   </td></td></t<>	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  %  %  ppm  ppm  %  %  %  ppm  ppm  %	Analyte  La  Cr  Mg  Ba  Ti  B  Al  Na  K  W  Sc  Ti  S  Hg    Unit  ppm  ppm  %  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppm  %  %  %  ppm  ppm  ppm  %  ppb  ppm  %  ppm  %  %  %  %  ppm  ppm  ppm  %  ppb   0.01  0.01  0.01  0.01  0.02  0.02  5    Standard  14.2  221.9  1.07  406.1  0.128  39  1.09  0.103  0.47  3.8  2.7  4.02  0.20  179    11.7  179  1.05  370.3  0.124  38.6  0.959  0.089  0.44  3.4  2.5  4.19  0.19  200	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  %  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  pph  ppm  %  %  %  %  ppm  ppm  %  pph  ppm  %  %  %  %  %  %  ppm  ppm  % </td <td>Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se  Te    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  ppm  %  0.02  0.02  0.02  5  0.1  0.02   </td>	Analyte  La  Cr  Mg  Ba  Ti  B  Ai  Na  K  W  Sc  Ti  S  Hg  Se  Te    Unit  ppm  ppm  %  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  %  %  ppm  ppm  ppm  %  ppm  ppm  ppm  %  0.02  0.02  0.02  5  0.1  0.02

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.

# Appendix B

# Laboratory Method Specifications



## METHOD SPECIFICATIONS GROUP 1D AND 1F – GEOCHEMICAL AQUA REGIA DIGESTION

Package Codes: Sample Digestion: Instrumentation Method: Applicability: 1D01 to 1D03, 1DX1 to 1DX3, 1F01 to 1F07 HNO3-HCI acid digestion ICP-ES (1D), ICP-MS (1DX, 1F) Sediment, Soil, Non-mineralized Rock and Drill Core

#### Method Description:

Prepared sample is digested with a modified Aqua Regia solution of equal parts concentrated HCl, HNO3 and DI H2O for one hour in a heating block of hot water bath. Sample is made up to volume with dilute HCl. Sample splits of 0.5g, 15g or 30g can be analyzed.

Element	Group 1D	Group 1DX	Group 1F	Upper
	Detection	Detection	Detection	Limit
Ag	0.3 ppm	0.1 ppm	2 ppb	100 ppm
Al*	0.01%	0.01%	0.01%	10%
As	2 ppm	0.5 ppm	0.1 ppm	10000 ppm
Au	2 ppm	0.5 ppb	0.2 ppb	100 ppm
B*^	20 ppm	20 ppm	20 ppm	2000 ppm
Ba*	1 ppm	1 ppm	0.5 ppm	10000 ppm
Bi	3 ppm	0.1 ppm	0.02 ppm	2000 ppm
Ca*	0.01%	0.01%	0.01%	40%
Cd	0.5 ppm	0.1 ppm	0.01 ppm	2000 ppm
Co	1 ppm	0.1 ppm	0.1 ppm	2000 ppm
Cr*	1 ppm	1 ppm	0.5 ppm	10000 ppm
Cu	1 ppm	0.1 ppm	0.01 ppm	10000 ppm
Fe*	0.01%	0.01%	0.01%	40%
Ga*	-	1 ppm	0.1 ppm	1000 ppm
Hg	1 ppm	0.01 ppm	5 ppb	50 ppm
К*	0.01%	0.01%	0.01%	10%
La*	1 ppm	1 ppm	0.5 ppm	10000 ppm
Mg*	0.01%	0.01%	0.01%	30%
Mn*	2 ppm	1 ppm	1 ppm	10000 ppm
Мо	1 ppm	0.1 ppm	0.01 ppm	2000 ppm
Na*	0.01%	0.001%	0.001%	5%
Ni	1 ppm	0.1 ppm	0.1 ppm	10000 ppm
P*	0.001%	0.001%	0.001%	5%
Pb	3 ppm	0.1 ppm	0.01 ppm	10000 ppm
S	0.05%	0.05%	0.02%	10%

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Element	Group 1D	Group 1DX	Group 1F	Upper
	Detection	Detection	Detection	Limit
Sb	3 ppm	0.1 ppm	0.02 ppm	2000 ppm
Sc	-	0.1 ppm	0.1 ppm	100 ppm
Se	-	0.5 ppm	0.1 ppm	100 ppm
Sr*	1 ppm	1 ppm	0.5 ppm	10000 ppm
Те	-	0.2 ppm	0.02 ppm	1000 ppm
Th*	2 ppm	0.1 ppm	0.1 ppm	2000 ppm
Ti*	0.01%	0.001%	0.001%	5%
TI	5 ppm	0.1 ppm	0.02 ppm	1000 ppm
U*	8 ppm	0.1 ppm	0.05 ppm	2000 ppm
V*	1 ppm	2 ppm	2 ppm	10000 ppm
W*	2 ppm	0.1 ppm	0.05 ppm	100 ppm
Zn	1 ppm	1 ppm	0.1 ppm	10000 ppm
Be*	-	-	0.1 ppm	1000 ppm
Ce*	-	-	0.1 ppm	2000 ppm
Cs*	_	-	0.02 ppm	2000 ppm
Ge*	-	-	0.1 ppm	/100 ppm
Hf*	-		0.02 ppm	1000 ppm
In	-	-	0.02 ppm	1000 ppm
Li*	-	-	0.1 ppm	2000 ppm
Nb*	-	+	0.02 ppm	2000 ppm
Rb*	-	-	0.1 ppm	2000 ppm
Re	•	-	1 ppb	1000 ppb
Sn*	-		0.1 ppm	100 ppm
Ta*	-	-	0.05 ppm	2000 ppm
<u>γ</u> *	-	-	0.01 ppm	2000 ppm
Zr*	_	-	0.1 ppm	2000 ppm
Pt*	-	-	2 ppb	100 ppm
Pd*	-	-	10 ppb	100 ppm
Pb <sub>204</sub>	-	-	0.01 ppm	10000 ppm
Pb <sub>206</sub>	-	-	0.01 ppm	10000 ppm
Pb <sub>207</sub>	-	-	0.01 ppm	10000 ppm
Pb <sub>208</sub>	•	-	0.01 ppm	10000 ppm

\* Solubility of some elements will be limited by mineral species present. ^Detection limit = 1 ppm for 15g / 30g analysis.

#### Limitations:

Au solubility can be limited by refractory and graphitic samples.

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