Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

Geoelectrical Survey with 2D Resistivity Squaw Creek, Yukon

FIELD WORK

May 21st – 23rd 2012

FOR

Gem Steel Edmonton Ltd.
Brad Gemmer
9060 – 24 Street
Edmonton, Alberta
T6P 1X8, Canada

FROM

Arctic Geophysics Inc.
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Philipp Moll

DATE OF DOCUMENTATION

June 6th 2012

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1. Introduction

This geophysical investigation was done for Brad Gemmer belonging to Gem Steel Edmonton Ltd..

The survey, using 2D Resistivity, was conducted to prospect the ground for placer mining interests. The geophysical prospecting program was focused on measuring and interpreting the following placer-related subsurface characteristics:

1. Depth and topography of bedrock
   Paleochannels, terraces
2. Sedimentary stratification
3. Groundwater, permafrost
4. Mining/prospecting history

The ground was tested with seven measuring lines up to a measuring depth of 70m. Two lines were run in Sept 2009. Another two lines were measured in Sept 2010. Three lines were done in Sept 2011. And three lines were run in May 2012. This assessment report just includes the data of the 2012 survey. The previous work was not used as assessment work.

2. Geophysical Method

Resistivity is not a time domain geophysical method such as Ground Penetrating Radar or Seismic. Resistivity measures a material property. In the Resistivity model the different underground zones are material-dependently differentiated according to their electrical conductivity. Thus, Resistivity promises good chances in respect of measuring the kind and character of the subsurface materials as well as the groundwater distribution, which would be of interest for placer mining. The equipment used (see below) allows for measuring of layer interfaces in depths from 0.5m to 90m by varying the electrode spacing. – Therefore, this prospecting concept is based on the use of 2D Resistivity.

Figure 01: 2D Resistivity/IP measurement, Stefan Ostermaier,
Arctic Geophysics Inc., Yukon 2009 (Moll)

3. Use of Geophysical Method

3.1. Instrumentation

For this survey a lightweight, custom-built 2D RESISTIVITY and INDUCED POLARIZATION (IP) imaging system with rapid data acquisition was used. The system includes:

- "4 POINT LIGHT" EARTH RESISTIVITY METER[1]
- 96 ELECTRODE CONTROL MODULES[2]
- 96 STAINLESS STEEL ELECTRODES[3]
- 480m MULTICORE CABLE: CONNECTOR SPACING: 5m[4]

[1] Constructed and produced by LGM (Germany)
[2] Ditto
[3] Constructed and produced by GEOANALYSIS.DE (Germany)
[4] Ditto

This system weighs approximately 120 kg which is about one third of regular standard equipment. It can be run with a 12V lead battery. The equipment facilitates high mobility and rapid data acquisition with a small crew.

3.2. Data Acquisition

Resistivity

The data acquisition is carried out by the automatic activation of 4-point-electrodes. Thus several thousand measurements are taken, one every 1-2 seconds. The AC transmitter current of 0.26 to 30 Hz is amplified by the electrode control modules, up to a maximum of 100mA and 400V peak to peak. The voltage measured at the receiver electrodes (M, N) is also amplified.
In this geoelectrical survey the **Schlumberger-array** was used. This array is appropriate to image horizontally running layers as is needed for placer prospecting.

The 2D Resistivity imaging system, used for this survey, allows measurements with a depth of up to 100m. With a depth to bedrock of more than 6m, an electrode spacing of 5m can be used for placer surveys. This allows the measuring of large profile lengths in short time with a horizontal measuring resolution of 2.5m. This quantification has proven itself to be reliable in the determination of the bedrock topography and sedimentary arrangement for placer investigation at the most environmental conditions.

The Schlumberger array, used in this geoelectrical survey, is appropriate to measure subsurface conditions predominantly showing a horizontal zoning of the ground materials.

3.3. Processing

Resistivity

The measured Resistivity data were processed with the **RES2DINV** inversion program[5].

3.4. Interpretation

The resistivity profiles are a reliable source for the interpretation of placer-related subsurface aspects of overburden and bedrock.

The interpretation of the data should be verified by physical prospecting methods such as drilling, trenching, or digging test holes since this information about the subsurface cannot be guaranteed!

[5] Produced by GEOTOMO SOFTWARE (Malaysia)

4. Profile image

In the **Resistivity profile** the interpreted layer interfaces are marked with a black line. The profiles show ground-layers approximately 15% thicker than they are in reality. The thickening of the model layers is caused by the inversion software. The **correction factor** of 0.85 for the determination of the true layer thickness has been established by the Arctic Geophysics Inc. team on the basis of numerous geoelectrical profiles verified by drilling, trenching, and mining done by our customers.[6]

The **graphical markings** showing the interpreted layer interfaces in the profiles (using a black line) are done according to the data structure in the profile itself. This means: the layers there will also show up approximately 15% thicker than they are expected in reality. In the interpretation text, the layer thicknesses and depths have been recalculated to the expected real values.

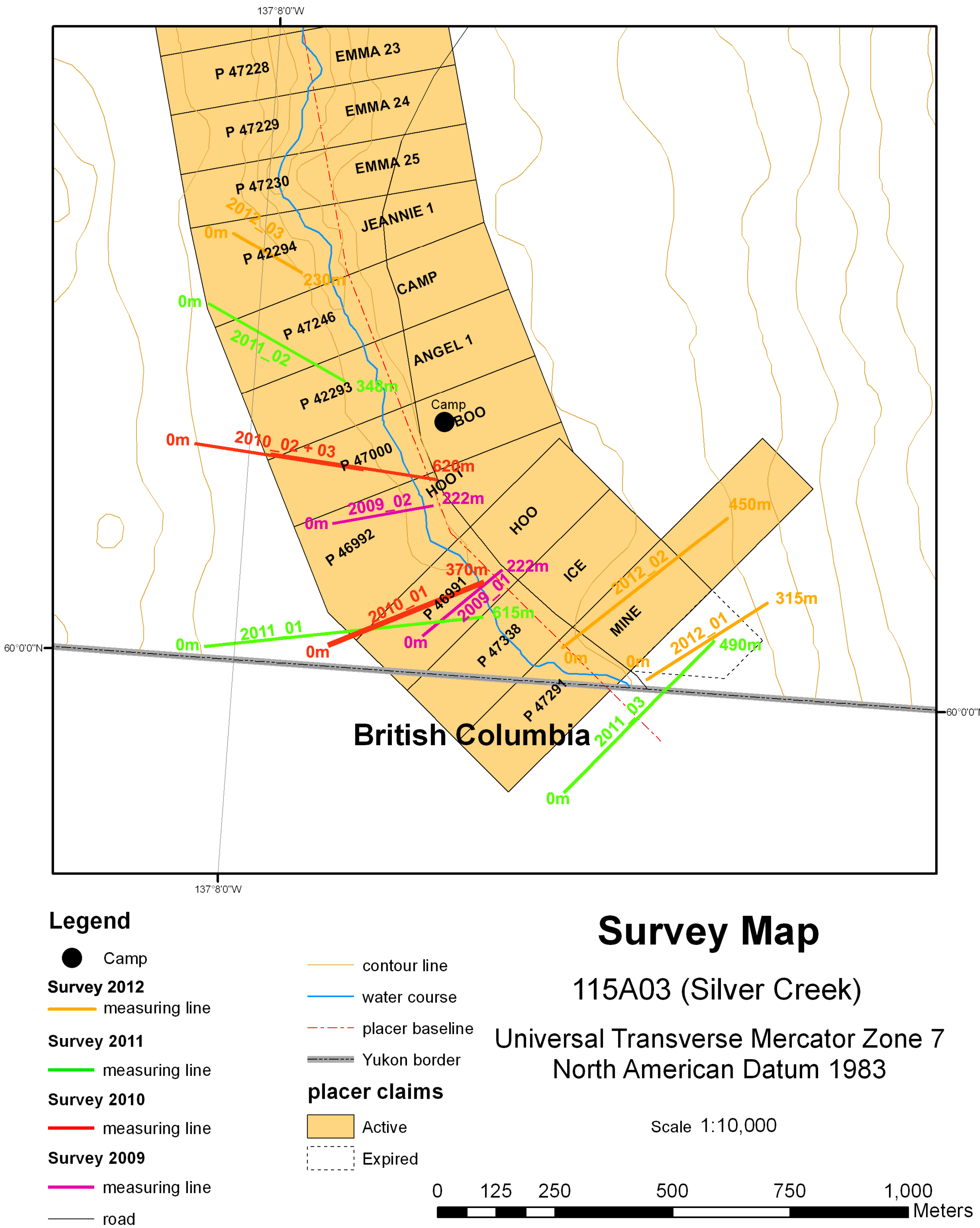
5. Line Arrangement

The **line locations** were discussed and decided upon by Stefan Ostermaier from Arctic Geophysics Inc. and Brad Gemmer. The goal of the survey was to establish the extent of the mining that took place and to see if there was any chance of channels and maybe virgin ground that had not previously been mined.

6. Survey Map

See next page

[6] Program settings in RES2DINV for modifying the layer thickness do frequently not work well for our use and could falsify the profile. That's why this mode was not used.


137°8'0"W
P 47228
EMMA 23
P 47229
EMMA 24
P 47230
EMMA 25
JEANNIE 1
2012_03
0m
P 42294
230m
CAMP
0m
P 47246
2011_02
ANGEL 1
P 42293
348m
Camp
BOO
0m
2010_02 + 03
P 47000
620m
HOO1
2009_02
222m
0m
P 46992
HOO
450m
370m
222m
ICE
2012_02
2010_01
P 46991
2009_01
615m
MINE
315m
2011_01
0m
0m
0m
P 47338
0m
0m
2012_01
490m
60°0'0"N
60°0'0"N
P 47291
British Columbia
2011_03
0m
137°8'0"W
Legend
Camp
Survey 2012
measuring line
Survey 2011
measuring line
Survey 2010
measuring line
Survey 2009
measuring line
road
contour line
water course
placer baseline
Yukon border
placer claims
Active
Expired
Survey Map
115A03 (Silver Creek)
Universal Transverse Mercator Zone 7
North American Datum 1983
Scale 1:10,000
0
125
250
500
750
1,000
Meters

7. Profiles: Interpretation, Recommendation

Profile 2012_01

Squaw Creek 2012_01
2D Resistivity, Schlumberger array
64 Electrodes: spacing 5m, Horizontal resolution 2.5m
Horizontal and vertical measure in [meter], Iteration error in [%]
The profile might show the layers up to 15% thicker than in reality.

Data acquisition: Stefan Ostermaier, 21st May 2012
Processing: Philipp Moll, 1st June 2012
This interpretation of geophysical data should be verified with physical prospecting methods such as drilling, trenching, test pitting, or shafting.

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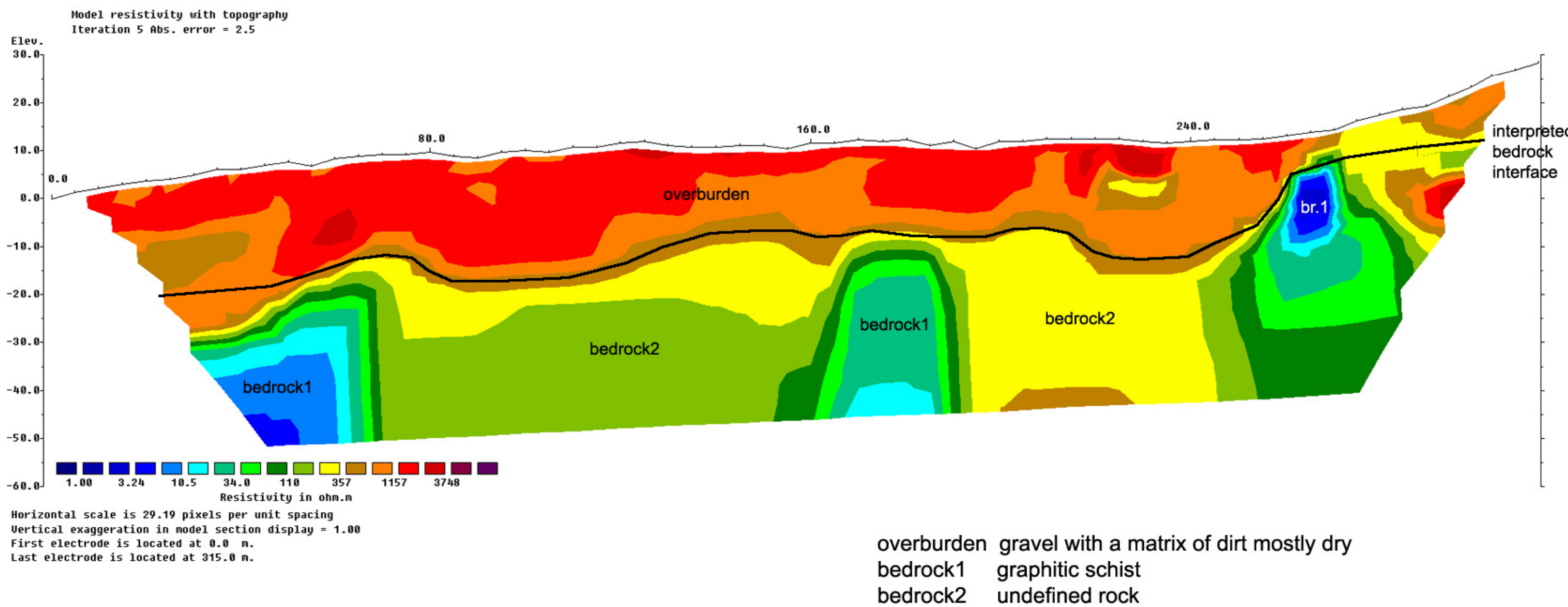
Interpretation



Interpretation

Resistivity Profile 2012_01 shows relatively homogeneous overburden with a thickness of 6-23m on top of heterogeneous bedrock with three possible channels in the bedrock interface.

From 0-50m there seems to be a paleo-channel about 20m deep. In the profile, the bedrock interface is imaged deeper than 20m – this seems to be caused by a fringe effect.[7] This possible channel would be the continuation of the channel-shaped bedrock structure in profile 2011_01 at 375m, showing same depth range: 21m!
The overburden has continuously high resistivity which would suggest a gravel deposit with a matrix poor in fine sediments such as silt and clay, but rich in sand, or even showing a lack of a matrix. This homogeneous overburden seems to be dominated by glacial till likely partly reworked by glaciofluvial processes.

At 75-125m there might be a channel about 23m deep at 95m (deepest point). This channel is the continuation of the channel interpreted in profile 2011_03, starting at 400m. In profile 2011_03 the channel is just partly shown and is imaged deeper than expected in reality because of a fringe effect. This large channel seems to be created in the first glacial and post-glacial period of Squaw Creek – being the main channel in this period. A large amount of till and glaciofluvial sediments might have been transported and reworked in this channel. In the past the overburden on this channel was likely much thicker and has been eroded.

[7] The profile might show the channel on the left edge too deep because of a lack of measured data at the border of the profile; so the too large depth seems to be caused by a fringe effect.

At 215-260m there seems to be another channel, about 20m deep at 230m (deepest point). This channel could be a side channel of the first glaciation at Squaw Creek

This profile is made on the right slope of the valley and is located about 20-50m higher (elevation) than the neighbour profiles farer downstream. Thus the channels in profiles 2012_01 and 2012_02 must be geologically younger than the ones in the profiles downstream.

The bedrock is heterogeneous, with at least two different kinds of bedrock that can be differentiated by its resistivity values. Bedrock_2 that appears to be at the center of the profile (valley), exhibits moderate resistivity values and could be some kind of metamorphic rock. Bedrock_1 that has very high conductivity is most likely graphitic schist.[8] The vertical orientation of these bedrock zones could indicate tectonically tilted schist.[9]

It is recommended to drill the profile at 30m, 95m, and 230m; there the bedrock could be 20m, 23m, and 21m deep.

[8] This type of bedrock was observed close to the camp (for more details see Profile 2011_02).
[9] Schist almost vertically layered was observed in the survey area.

Profile 20 12_02

Squaw Creek 2012_02
2D Resistivity, Schlumberger array
91 Electrodes: spacing 5m, Horizontal resolution 2.5m
Horizontal and vertical measure in [meter], Iteration error in [%]
The profile might show the layers up to 15% thicker than in reality.

Data acquisition: Stefan Ostermaier, 22nd May 2012
Processing: Philipp Moll, 1st June 2012
This interpretation of geophysical data should be verified with physical prospecting methods such as drilling, trenching, test pitting, or shafting.

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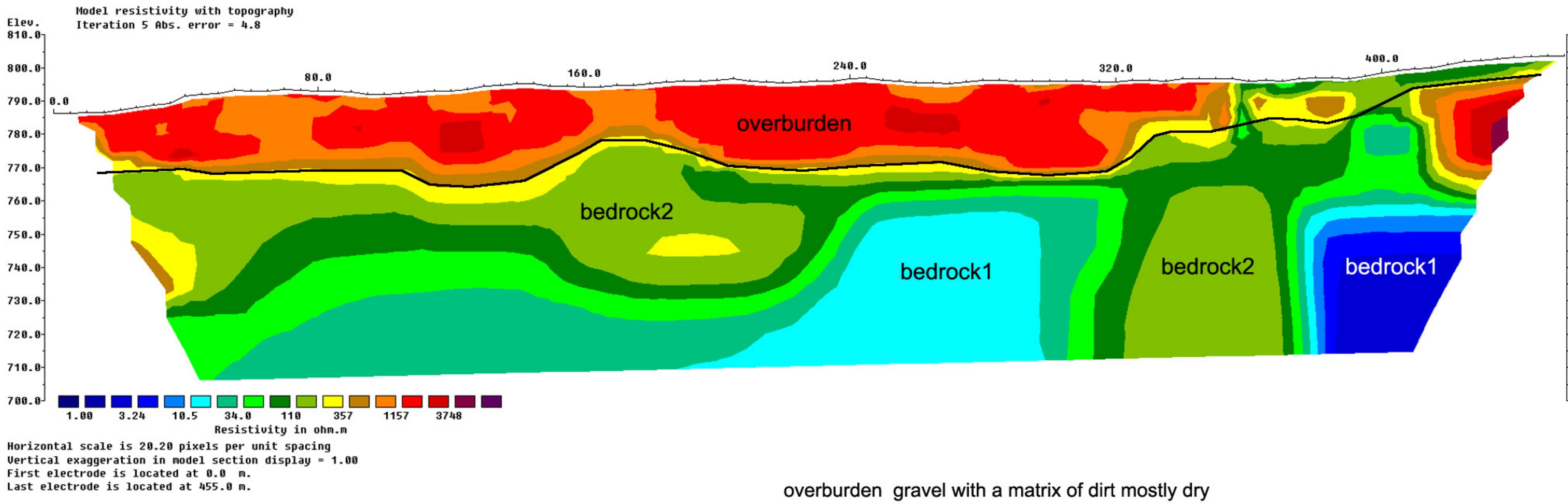
Interpretation



overburden	gravel with a matrix of dirt mostly dry
bedrock1	graphitic schist
bedrock2	undefined rock

Interpretation

Resistivity Profile 2012_02 shows relatively homogeneous overburden with a thickness of 5-24m on top of heterogeneous bedrock with three possible channels in the bedrock interface.

From 110-160m and from 190-330m there seem to be two paleo-channels on the terrace, 24m and 23m deep, filled with the same kind of overburden as profiles 2012_01 and 2011_03. These two channels seem to belong to the channel system of the first glacial cycle of Squaw Creek described in profile 2012_01. The right channel seems to be the main channel of this period. Same as in profile 2012_01 a large amount of till and glaciofluvial sediments might have been transported and reworked in these channels. The overburden on it was likely much thicker in the past and has been eroded.

Same as profile 2012_01 this profile is made on the right slope of the valley and is located about 20-50m higher (elevation) than the neighbour profiles farer downstream. Thus the channels in profiles 2012_01 and 2012_02 must be geologically younger than the ones in the profiles downstream.[10]

[13] The elevation measured at profiles 2012_02 and 2011_01 does not allow any comparison since the GPS data were measured much too rough - likely because of the availability of a different data quality from the satellites.

The bedrock is heterogeneous, with at least two different kinds of bedrock that can be differentiated by its resistivity values. Bedrock_2 that appears to be at the center of the profile (valley), exhibits moderate resistivity values and could be some kind of metamorphic rock. Bedrock_1 that has very high conductivity is most likely graphitic schist.[14] The vertical orientation of these bedrock zones could indicate tectonically tilted schist.[15]

It is recommended to drill the profile at 125m, 220m, and 300m; there the bedrock could be 20m, 18m, and 20m deep.

[10] The elevation measured at profiles 2012_02 and 2011_01 does not allow any comparison since the GPS data were measured much too rough - likely because of the availability of a different data quality from the satellites.

Profile 2012_03

Squaw Creek 2012_03
2D Resistivity, Schlumberger array
48 Electrodes: spacing 5m, Horizontal resolution 2.5m
Horizontal and vertical measure in [meter], Iteration error in [%]
The profile might show the layers up to 15% thicker than in reality.

Data acquisition: Stefan Ostermaier, 23nd May 2012
Processing: Philipp Moll, 1st June 2012
This interpretation of geophysical data should be verified with physical prospecting methods such as drilling, trenching, test pitting, or shafting.

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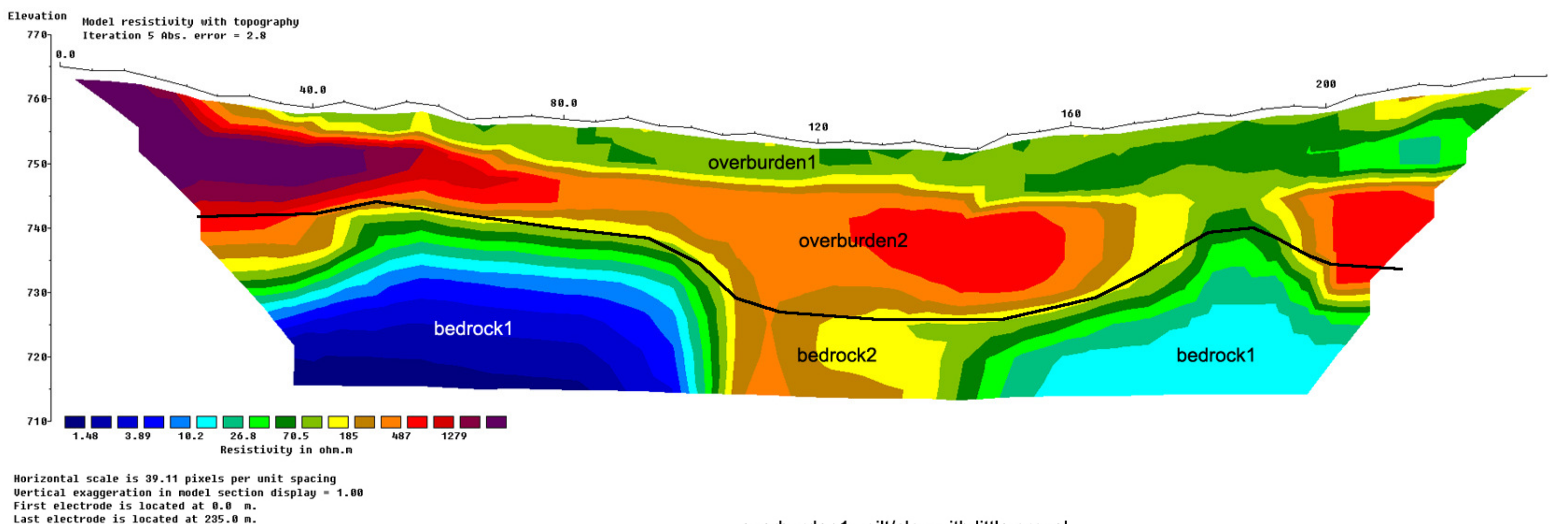
Interpretation



overburden1: silt/clay with little gravel
overburden2: gravel with a matrix of dirt mostly dry
bedrock1: very well conducting bedrock probably graphitic schist
bedrock2: undefined rock, possibly schist

Interpretation

In this section of the valley the overburden seems to be bi-layered again.

At 100-180m a prominent channel seems to be located in the middle of the profile/valley. At 135m this channel seems to be 24m deep.

The topmost overburden layer (green) is 5-9m thick and might consist of fine sediment dominated by silt and clay with little gravel in it. This might be the same/similar material as the second layer (blue) in profiles 2010_02/_03. The origin of this material is mainly glaciolacustrine but also glaciofluvial.

The second overburden layer (red) 14-18m thick, is most likely again till partly reworked by glaciofluvial processes.

On both sides of the profile the bedrock interface seems to show a secondary channel or terrace. These features are only partly seen in the profile and could be created while the first glacial period.

It is recommended to drill the profile at 30m, 135m and 210m; there the bedrock could be 16m, 24m, and 23m deep.

8. Gallery

Figure 02: Survey Area, looking upstream


Figure 03: Photo made on Line 2010_3 at 340m, looking downstream: solid metamorphic bedrock

Figure 04: Ditto looking upstream: schistoid bedrock fractured and weathered, tectonically folded (almost vertically foliated)

Figure 05: Mining Camp

Figure 06: Survey area looking upstream, Line 2011_03 located in front of gravel pile

9. Qualifications

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- Study of geology, University of Freiburg, Germany

- Visit of geophysical field courses, University of Karlsruhe and University of Stuttgart, Germany

- Working for Arctic Geophysics Inc. since June 2007 (foundation)

Geophysical field surveys using 2D Resistivity, Induced Polarization, Magnetics: Data acquisition, processing, interpretation, documentation

- Geophysical surveying for Mining Exploration in the Yukon since 2005

- Geological Prospecting for precious metals and minerals in the Yukon, NWTs, and Alaska since 1989

- Publications:

  A) Numerous Assessment Reports about geophysical surveys done for Yukon mining companies, filedat Yukon Mining Recorder

  B) Geophysical survey (45 field days) for Yukon Government: Yukon Geological Survey, Publication:
  http://www.geology.gov.yk.ca/recent.html Open Files: Moll, P., &Ostermaier, S., 2010. 2D Resistivity/IP Data Release for Placer Mining and shallow Quartz Mining - Yukon 2010.Yukon Geological Survey Miscellaneous Report MR-4.PDF Report [10.3 MB] &Data Profiles [45.4 MB]

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  http://www.geology.gov.yk.ca/recent.html Open Files: Moll, P., &Ostermaier, S., 2010. 2D Resistivity/IP Data Release for Placer Mining and shallow Quartz Mining - Yukon 2010.Yukon Geological Survey Miscellaneous Report MR-4.PDF Report [10.3 MB] &Data Profiles [45.4 MB]

Stefan Ostermaier

10. Appendix

Literature

Literature – Background

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Press F., Siever R., Grotzinger J., Thomas H.J. Understanding Earth, W.H. Freeman and Company, New York (2004)

Robb L. Introducing to Ore-Forming Processes, Backwell Science Ltd., 2005

Maps

Government of Canada, Natural Resources Canada, Centre for Topographic Information: 115A03; 2005

Geophysical Data Table

Rock type	Resistivity range (Ωm)
Granite porphyry	4.5×10^3 (wet) – 1.3×10^6 (dry)
Feldspar porphyry	4×10^3 (wet)
Syenite	$10^2 - 10^6$
Diorite porphyry	1.9×10^3 (wet) – 2.8×10^4 (dry)
Porphyrite	$10 - 5 \times 10^4$ (wet) – 3.3×10^3 (dry)
Carbonatized porphyry	2.5×10^3 (wet) – 6×10^4 (dry)
Quartz diorite	$2 \times 10^4 - 2 \times 10^6$ (wet) –1.8×10^5 (dry)
Porphyry (various)	$60 - 10^4$
Dacite	2×10^4 (wet)
Andesite	4.5×10^4 (wet) – 1.7×10^2 (dry)
Diabase (various)	$20 - 5 \times 10^7$
Lavas	$10^2 - 5 \times 10^4$
Gabbro	$10^3 - 10^6$
Basalt	$10 - 1.3 \times 10^7$ (dry)
Olivine norite	$10^3 - 6 \times 10^4$ (wet)
Peridotite	3×10^3 (wet) – 6.5×10^3 (dry)
Hornfels	8×10^3 (wet) – 6×10^7 (dry)
Schists (calcareous and mica)	$20 - 10^4$
Tuffs	2×10^3 (wet) – 10^5 (dry)
Graphite schist	$10 - 10^2$
Slates (various)	$6 \times 10^2 - 4 \times 10^7$
Gneiss (various)	6.8×10^4 (wet) – 3×10^6 (dry)
Marble	$10^2 - 2.5 \times 10^8$ (dry)
Skarn	2.5×10^2 (wet) – 2.5×10^8 (dry)
Quartzites (various)	$10 - 2 \times 10^8$
Consolidated shales	$20 - 2 \times 10^3$
Argillites	$10 - 8 \times 10^2$
Conglomerates	$2 \times 10^3 - 10^4$
Sandstones	$1 - 6.4 \times 10^8$
Limestones	$50 - 10^7$
Dolomite	$3.5 \times 10^2 - 5 \times 10^3$
Unconsolidated wet clay	20
Marls	3 – 70
Clays	1 – 100
Oil sands	4 – 800

GPS-Data

Profile 2012_01

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
1	0.0	N60 00.014 W137 07.056	3	*
2	5.0	N60 00.015 W137 07.050	3	
3	10.0	N60 00.016 W137 07.045	3	
4	15.0	N60 00.016 W137 07.041	3	
5	20.0	N60 00.018 W137 07.036	3	
6	25.0	N60 00.020 W137 07.032	3	
7	30.0	N60 00.021 W137 07.028	3	
8	35.0	N60 00.023 W137 07.024	3	
9	40.0	N60 00.025 W137 07.021	3	
10	45.0	N60 00.027 W137 07.016	3	
11	50.0	N60 00.029 W137 07.011	3	
12	55.0	N60 00.031 W137 07.007	3	
13	60.0	N60 00.032 W137 07.004	3	
14	65.0	N60 00.034 W137 06.999	3	
15	70.0	N60 00.035 W137 06.996	3	
16	75.0	N60 00.037 W137 06.991	3	
17	80.0	N60 00.039 W137 06.986	3	
18	85.0	N60 00.040 W137 06.981	3	
19	90.0	N60 00.041 W137 06.978	3	
20	95.0	N60 00.043 W137 06.973	3	
21	100.0	N60 00.045 W137 06.968	3	
22	105.0	N60 00.045 W137 06.966	3	
23	110.0	N60 00.048 W137 06.960	3	
24	115.0	N60 00.049 W137 06.955	3	
25	120.0	N60 00.051 W137 06.950	3	
26	125.0	N60 00.053 W137 06.948	3	
27	130.0	N60 00.055 W137 06.943	3	
28	135.0	N60 00.056 W137 06.940	3	
29	140.0	N60 00.058 W137	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
		06.936		
30	145.0	N60 00.060 W137 06.932	3	
31	150.0	N60 00.061 W137 06.927	3	*
32	155.0	N60 00.064 W137 06.922	3	
33	160.0	N60 00.066 W137 06.920	3	
34	165.0	N60 00.067 W137 06.915	3	
35	170.0	N60 00.068 W137 06.911	3	
36	175.0	N60 00.069 W137 06.906	3	
37	180.0	N60 00.071 W137 06.901	3	
38	185.0	N60 00.073 W137 06.897	3	
39	190.0	N60 00.075 W137 06.893	3	
40	195.0	N60 00.076 W137 06.888	3	
41	200.0	N60 00.077 W137 06.886	3	
42	205.0	N60 00.078 W137 06.882	3	
43	210.0	N60 00.080 W137 06.878	3	
44	215.0	N60 00.081 W137 06.874	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
45	220.0	N60 00.082 W137 06.871	3	
46	225.0	N60 00.085 W137 06.866	3	
47	230.0	N60 00.086 W137 06.862	3	
48	235.0	N60 00.087 W137 06.858	3	
49	240.0	N60 00.090 W137 06.852	3	
50	245.0	N60 00.092 W137 06.846	3	
51	250.0	N60 00.094 W137 06.842	3	
52	255.0	N60 00.096 W137 06.838	3	
53	260.0	N60 00.097 W137 06.834	3	
54	265.0	N60 00.099 W137 06.831	3	
55	270.0	N60 00.101 W137 06.826	3	
56	275.0	N60 00.102 W137 06.824	3	
57	280.0	N60 00.104 W137 06.823	3	
58	285.0	N60 00.105 W137 06.819	3	
59	290.0	N60 00.106 W137 06.813	3	
60	295.0	N60 00.106	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
		W137 06.810		
61	300.0	N60 00.109 W137 06.805	3	
62	305.0	N60 00.111 W137 06.806	3	
63	310.0	N60 00.111 W137 06.801	3	
64	315.0	N60 00.111 W137 06.796	3	*

Profile 2012_02

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
1	0.0	N60 00.043 W137 07.254	3	*
2	5.0	N60 00.045 W137 07.248	3	
3	10.0	N60 00.046 W137 07.244	3	
4	15.0	N60 00.047 W137 07.241	3	
5	20.0	N60 00.049 W137 07.236	3	
6	25.0	N60 00.051 W137 07.233	3	
7	30.0	N60 00.054 W137 07.229	3	
8	35.0	N60 00.056 W137 07.226	3	
9	40.0	N60 00.057 W137 07.223	3	
10	45.0	N60 00.058 W137 07.221	3	
11	50.0	N60 00.060 W137 07.216	3	
12	55.0	N60 00.062 W137 07.210	3	
13	60.0	N60 00.065 W137 07.206	3	
14	65.0	N60 00.067 W137 07.202	3	
15	70.0	N60 00.069	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
		W137 07.198		
16	75.0	N60 00.071 W137 07.194	3	
17	80.0	N60 00.072 W137 07.190	3	
18	85.0	N60 00.075 W137 07.187	3	
19	90.0	N60 00.077 W137 07.183	3	
20	95.0	N60 00.078 W137 07.181	3	
21	100.0	N60 00.079 W137 07.177	3	
22	105.0	N60 00.080 W137 07.172	3	
23	110.0	N60 00.082 W137 07.167	3	
24	115.0	N60 00.084 W137 07.164	3	
25	120.0	N60 00.086 W137 07.160	3	
26	125.0	N60 00.088 W137 07.158	3	
27	130.0	N60 00.090 W137 07.153	3	
28	135.0	N60 00.092 W137 07.148	3	
29	140.0	N60 00.093 W137 07.145	3	
30	145.0	N60 00.095 W137	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
		07.140		
31	150.0	N60 00.097 W137 07.138	3	
32	155.0	N60 00.098 W137 07.134	3	
33	160.0	N60 00.100 W137 07.131	3	
34	165.0	N60 00.102 W137 07.127	3	
35	170.0	N60 00.104 W137 07.122	3	
36	175.0	N60 00.106 W137 07.118	3	
37	180.0	N60 00.108 W137 07.113	3	
38	185.0	N60 00.110 W137 07.110	3	
39	190.0	N60 00.112 W137 07.106	3	
40	195.0	N60 00.113 W137 07.103	3	
41	200.0	N60 00.115 W137 07.098	3	*
42	205.0	N60 00.118 W137 07.095	3	
43	210.0	N60 00.119 W137 07.093	3	
44	215.0	N60 00.121 W137 07.087	3	
45	220.0	N60 00.124 W137 07.083	3	

Electrod e No.	Locatio n in Profile [m]	GPS-Coordinate s Latitude/ Longitude hddd° mm.mmm'	GPS-Accurac y [m]	Pos t [*]
46	225.0	N60 00.124 W137 07.078	3	
47	230.0	N60 00.126 W137 07.074	3	
48	235.0	N60 00.128 W137 07.071	3	
49	240.0	N60 00.130 W137 07.067	3	
50	245.0	N60 00.131 W137 07.064	3	
51	250.0	N60 00.134 W137 07.060	3	
52	255.0	N60 00.136 W137 07.056	3	
53	260.0	N60 00.138 W137 07.052	3	
54	265.0	N60 00.139 W137 07.049	3	
55	270.0	N60 00.141 W137 07.044	3	
56	275.0	N60 00.143 W137 07.040	3	
57	280.0	N60 00.145 W137 07.037	3	
58	285.0	N60 00.146 W137 07.032	3	
59	290.0	N60 00.149 W137 07.027	3	
60	295.0	N60 00.150 W137 07.024	3	
61	300.0	N60 00.152	3	

Electrod e No.	Locatio n in Profile [m]	GPS-Coordinate s Latitude/ Longitude hddd° mm.mmm'	GPS-Accurac y [m]	Pos t [*]
		W137 07.020		
62	305.0	N60 00.154 W137 07.017	3	
63	310.0	N60 00.154 W137 07.013	3	
64	315.0	N60 00.156 W137 07.009	3	
65	320.0	N60 00.159 W137 07.004	3	
66	325.0	N60 00.161 W137 07.001	3	
67	330.0	N60 00.163 W137 06.997	3	
68	335.0	N60 00.164 W137 06.993	3	
69	340.0	N60 00.166 W137 06.990	3	
70	345.0	N60 00.168 W137 06.983	3	
71	350.0	N60 00.170 W137 06.980	3	
72	355.0	N60 00.172 W137 06.975	3	
73	360.0	N60 00.173 W137 06.972	3	
74	365.0	N60 00.175 W137 06.969	3	
75	370.0	N60 00.177 W137 06.966	3	
76	375.0	N60 00.179 W137	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
		06.961		
77	380.0	N60 00.180 W137 06.959	3	
78	385.0	N60 00.184 W137 06.953	3	
79	390.0	N60 00.186 W137 06.950	3	
80	395.0	N60 00.187 W137 06.948	3	
81	400.0	N60 00.188 W137 06.944	3	
82	405.0	N60 00.189 W137 06.939	3	
83	410.0	N60 00.192 W137 06.934	3	
84	415.0	N60 00.193 W137 06.930	3	
85	420.0	N60 00.194 W137 06.925	3	
86	425.0	N60 00.197 W137 06.921	3	
87	430.0	N60 00.198 W137 06.917	3	
88	435.0	N60 00.200 W137 06.916	3	
89	440.0	N60 00.201 W137 06.910	3	
90	445.0	N60 00.204 W137 06.907	3	
91	450.0	N60 00.205 W137 06.900	3	*

Profile 2012_03

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
1	0.0	N60 00.416 W137 07.869	3	*
2	5.0	N60 00.419 W137 07.875	3	
3	10.0	N60 00.420 W137 07.879	3	
4	15.0	N60 00.423 W137 07.883	3	
5	20.0	N60 00.424 W137 07.887	3	
6	25.0	N60 00.424 W137 07.892	3	
7	30.0	N60 00.426 W137 07.897	3	
8	35.0	N60 00.428 W137 07.902	3	
9	40.0	N60 00.429 W137 07.903	3	
10	45.0	N60 00.431 W137 07.908	3	
11	50.0	N60 00.433 W137 07.913	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates Latitude/ Longitude hddd° mm.mmm'	GPS-Accuracy [m]	Post [*]
12	55.0	N60 00.434 W137 07.918	3	
13	60.0	N60 00.435 W137 07.923	3	
14	65.0	N60 00.437 W137 07.928	3	
15	70.0	N60 00.438 W137 07.932	3	
16	75.0	N60 00.440 W137 07.937	3	
17	80.0	N60 00.441 W137 07.941	3	
18	85.0	N60 00.442 W137 07.944	3	
19	90.0	N60 00.444 W137 07.950	3	
20	95.0	N60 00.445 W137 07.952	3	
21	100.0	N60 00.447 W137 07.956	3	
22	105.0	N60 00.448 W137 07.960	3	
23	110.0	N60 00.450 W137 07.968	3	
24	115.0	N60 00.451 W137 07.971	3	
25	120.0	N60 00.453 W137 07.976	3	
26	125.0	N60 00.454 W137 07.980	3	
27	130.0	N60 00.456 W137 07.983	3	
28	135.0	N60 00.457 W137 07.987	3	
29	140.0	N60 00.459 W137 07.993	3	
30	145.0	N60 00.460 W137 07.993	3	
31	150.0	N60 00.462 W137 08.001	3	
32	155.0	N60 00.464 W137 08.005	3	
33	160.0	N60 00.468 W137 08.014	3	
34	165.0	N60 00.469 W137 08.019	3	
35	170.0	N60 00.471 W137 08.022	3	
36	175.0	N60 00.473 W137 08.026	3	
37	180.0	N60 00.474 W137 08.031	3	
39	190.0	N60 00.476 W137 08.035	3	
40	195.0	N60 00.477 W137 08.038	3	
41	200.0	N60 00.479 W137 08.041	3	
42	205.0	N60 00.480 W137 08.045	3	
43	210.0	N60 00.483 W137 08.050	3	
44	215.0	N60 00.484 W137 08.054	3	
45	220.0	N60 00.485 W137 08.060	3	
46	225.0	N60 00.487 W137 08.065	3	
47	230.0	N60 00.489 W137 08.069	3	
48	235.0	N60 00.491 W137 08.072	3	*

Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

Gem Steele Edmonton Ltd.
9060 - 24 Street
Edmonton, Alberta
T6P 1X8

Survey Location: Squaw Creek

Arctic Geophysics Inc.
Box 747
Dawson City, Yukon
Y0B-1G0, Canada
Phone: 867-993-3671 (Cell)
info@arctic-geophysics.com
www.arctic-geophysics.com

Invoice # 20120606

Date: 6th June, 2012

Quantity	Description	Amount $CAN
Mob/Demob		
	Dawson – Haines Junction - Dawson [50% share]	
2 days	Vehicle 70.--/ day	70.--
1420km	$ 0.55/km	390,50
2 days	Driving, operator + assistant, 450.--/day	450.--
Geophysical Survey		
3 days	Geoelectrical 2D-Resistivity Imaging System: 96 electrodes, 480m multi-core cable, PC, software, GPS, altimeter etc., 880.--/day	2640.--
1 day	Survey Leader, 400.--/day	400.--
4 days	Field Assistant, 250.--/ day	1000.--
2 days	Working data, Documentation, 350.-- /day	700.--
	NET Amount	$ 5 650.50
GST Number 846363216RT0001	**G.S.T. (5%)**	$ 282.52
Total Due		**$ 5 933.02**

Banking Information:

Transfer from Canada
CIBC, Bank Number: 010
Branch Address:
978 2nd Avenue, Dawson City, YT
Y0B 1G0, Canada
Branch Transit 00480
Account Number: 99-06312

Transfer from USA
Pay by CHIPS to: Bank of America, New York:
(=Institution supporting money transfer)
BIC: BOFAUS3N
CHIPS: UID 0959

Transfer from USA
Pay by FEDWIRE to: Bank of America, New York:
BIC: BOFAUS3N
ABA or Routing Number 026009593

Transfer from international not USA
CIBC Swift Code: CIBCCATT
CIBC Institution Number: 010

Grant #	RegType	ClaimName	ClaimNbr	Claim Owner	OperationRecordingDate	StakingDate	Status	Lease	NTS Map
P 47116	Placer	TOP		Bradley Gemmer - 100%	9/13/2001	9/11/2001	Active		115A03
P 47000	Placer	BOO		Bradley Gemmer - 100%	9/8/2000	9/7/2000	Active		115A03
P 47227	Placer	EMMA	22	Bradley Gemmer - 100%	9/5/2002	9/3/2002	Active	IW00152	115A03
P 47228	Placer	EMMA	23	Bradley Gemmer - 100%	9/5/2002	9/3/2002	Active	IW00152	115A03
P 47229	Placer	EMMA	24	Bradley Gemmer - 100%	9/5/2002	9/3/2002	Active	IW00152	115A03
P 47230	Placer	EMMA	25	Bradley Gemmer - 100%	9/5/2002	9/3/2002	Active	IW00152	115A03
P 47291	Placer	MINE		Bradley Gemmer - 100%	9/8/2003	9/7/2003	Active		115A03
P 46992	Placer	HOOT		Bradley Gemmer - 100%	9/7/2000	9/7/2000	Active		115A03
P 47226	Placer	EMMA	21	Bradley Gemmer - 100%	9/5/2002	9/3/2002	Active	IW00152	115A03
P 42294	Placer	JEANNIE	1	Bradley Gemmer - 100%	7/25/1997	7/25/1997	Active		115A03
P 42293	Placer	ANGEL	1	Bradley Gemmer - 100%	7/25/1997	7/25/1997	Active		115A03
P 46991	Placer	HOO		Bradley Gemmer - 100%	9/7/2000	9/7/2000	Active		115A03
P 47338	Placer	ICE		Bradley Gemmer - 100%	5/17/2004	5/15/2004	Active		115A03
P 47246	Placer	CAMP		Bradley Gemmer - 100%	8/8/2003	8/7/2003	Active		115A03