Arctic Geophysics Inc.

Geophysical Surveys • Prospecting • Consulting

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

Geophysical Survey with 2D Resistivity for Placer Investigation, Dawson Range 2013

LOCATION
Prospecting Leases ID00967
N64 01 23.0 W139 12 38.7

FOR
Diamond Tooth Resources
PO Box 1170
Marsh Lake Yukon
Y0B 1Y1

AUTHOR
Philipp Moll

WORK PERFORMED
Sept 6th 2013

DATE OF REPORT
Nov 6th 2013

Table of Contents

1 Introduction

This geophysical investigation was done for Charlie Brown, Diamond Tooth Resources. The survey, using 2D Resistivity, was conducted to prospect the tenure listed below for the localisation of possible targets for placer gold. The ground was tested with one 2D measuring line with a length of 235m; the depth of investigation is approximately 40m.

2 Placer Tenures

Grant Number	Name	Owner
ID 00967	-	Gay Ora Berg

3 Location

The placer property is located app. 10km east of Dawson City on a small tributary to Klondike River, map number 116B03.

4 Access

The exploration site was accessed over the Klondike Highway and the local road to the Bear Creek subdivision.

5 Goal

The survey was focussed on measuring and interpreting the following subsurface characteristics:

1. Depth and topography of bedrock
    - Paleochannels
    - Bedrock benches
2. Sedimentary stratification
3. Permafrost conditions
4. Groundwater table
5. Mining/prospecting history

6 Geophysical Methods

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 100m by varying the electrode spacing. – Therefore, this prospecting concept is based on the use of 2D Resistivity.

Figure 1: 2D Resistivity measurement, Stefan Ostermaier, Arctic Geophysics Inc., Yukon 2009

7 Use of Geophysical Methods

7.1 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]
- 48 ELECTRODE CONTROL MODULES[2]
- 48 STAINLESS STEEL ELECTRODES[3]
- 240m MULTICORE CABLE: CONNECTOR SPACING: 5m[4]

This system weighs approximately 150 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.

7.2 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 horizontal 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 system has proven itself to be reliable in the determination of the bedrock topography and sedimentary arrangement for placer investigation at the most environmental conditions.

7.3 Processing

Resistivity

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

[1] Constructed and produced by LGM (Germany)
[2] Ditto
[3] Constructed and produced by GEOANALYSIS.DE (Germany)
[4] Ditto
[5] Produced by GEOTOMO SOFTWARE SDN. BHD (Malaysia)

7.4 Interpretation

The interpretation of the profiles should be verified by physical prospecting methods such as digging test holes/trenches, drilling, or shafting.

8 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. At the “measuring sticks”, as well as in the interpretation text, the layer thicknesses and depths have been recalculated to the expected real values.

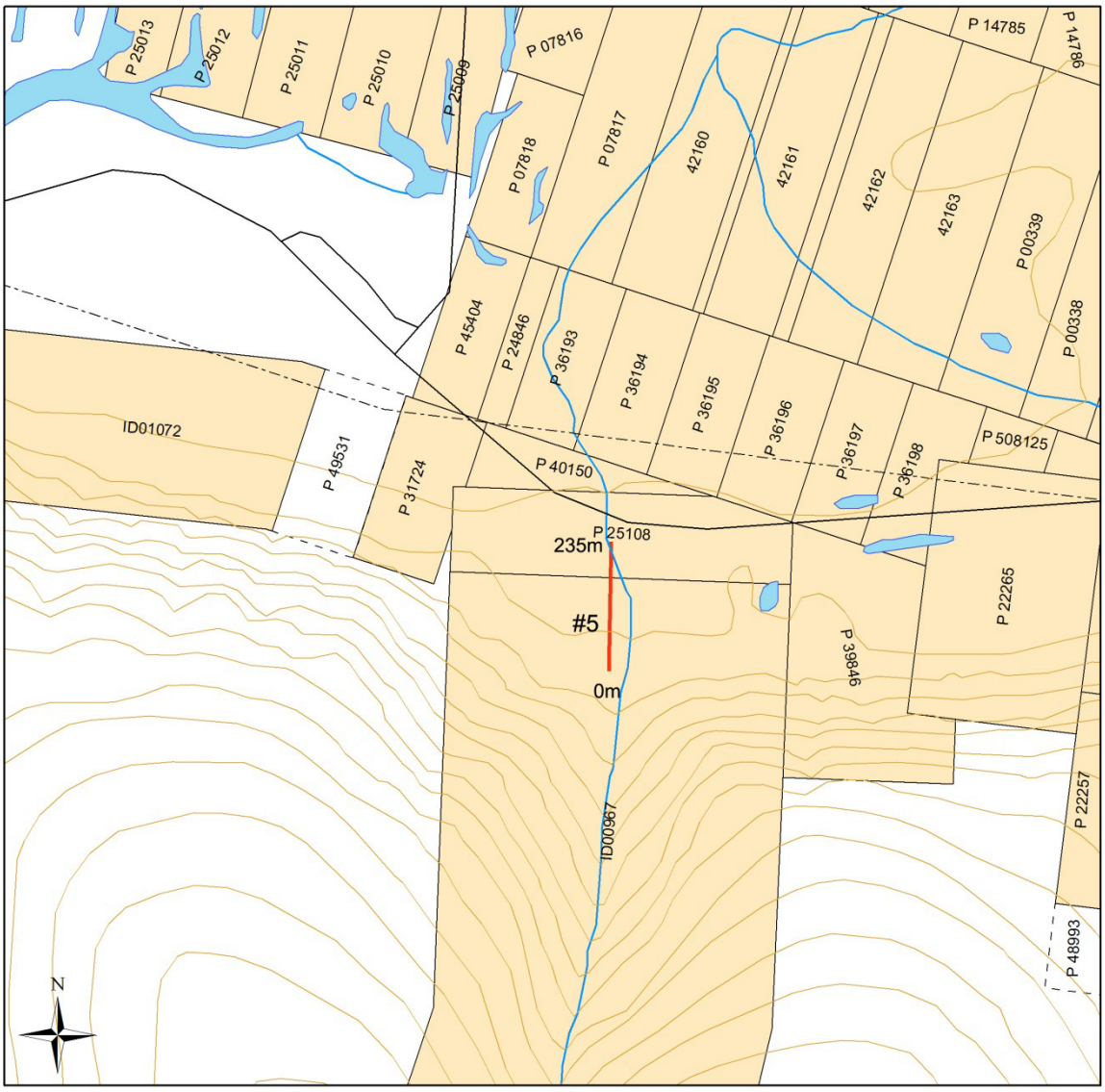
9 Resistivity Survey

Preliminary Note!

The subsurface information of this study is an interpretation and cannot be guaranteed.

[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.

9.1 Survey Map[7]



Legend

- measuring line
- contour line
- watercourse
- road
- trail
- cut line
- waterbody
- wetland

placer claims

- Active
- Expired

prospecting lease

- Active
- Expired

Survey Map

116B03 (Dawson)

Universal Transverse Mercator Zone7
North America Datum 1983

Scale 1:10.000

Meters
0 80 160 320 480 640

[7] Government of Canada, Natural Resources Canada, Centre for Topographic Information
ftp://ftp.geomaticsyukon.ca/Mining

9.2 Profile: Interpretation, Recommendation

Line 05
2D Resist ivity, Schlumberger array
48 Electrodes: spacing 5m, Horizontal resolution 2.5m
Horizontal and vertical measure in [meter], Iteration error in [%]
Vertical exaggeration in model section display = 1.00
Data acquisition: Stefan Ostermaier, 8th Sept 2013
Processing: Stefan Ostermaier, 5th Nov 2013
Arctic Geophysics Inc., Yukon

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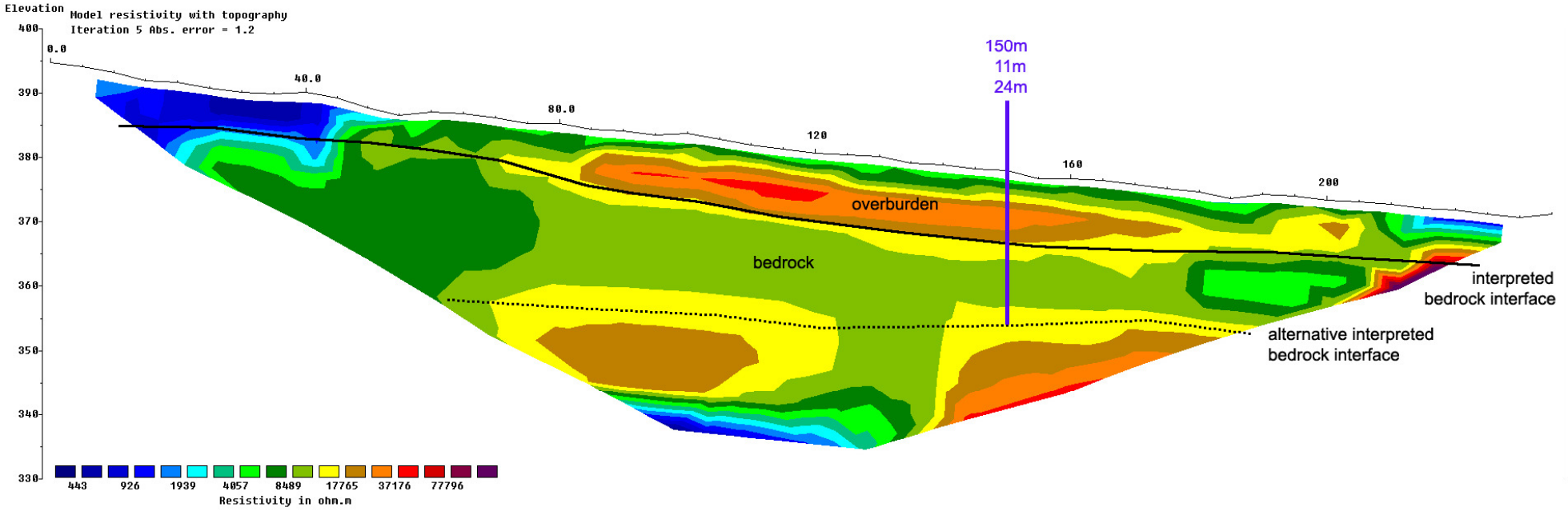

The profile might show the ground-layers up to approximately 15% thicker than they are in reality.

This 2D Resistivity measuring result is an interpretation of geophysical data. We recommend the verification of the profile by drilling or trenching or shafting.

Interpretation

The interpretation of resistivity profile_05 indicates 8-11m of overburden on top of bedrock. Alternatively the bedrock could be around 24m deep (alternative interpretation).

At 2-11m depth the overburden shows discontinuous resistivity data from 800 to 60 000 Ohm meter representing different amounts of permafrost: The blue data zone indicates thawed sediments; the green data zone represents partly frozen sediments; and the orange/red data zone should be fully frozen sediments. The overburden material might consist of muck on top of gravel. If the bedrock is up to 11m deep, the interface between muck and gravel cannot be detected in the profile, because the materials do have similar resistivity. The gravel (Klondike Gravel) must have a voluminous matrix[8]. On the surface the overburden is thawed.

If the alternative interpretation would be true, the bedrock would be about 24m deep. If this is the case, the red/orange data layer would most likely be frozen muck, and the green data layer below would be frozen gravel.

The bedrock was measured at 10 000 - 30 000 Ohm meter. This data indicates a solid/competent rock for example the non-graphitic quartzite of the Nasina Assemblage that the geological map indicates.

Recommendation

We recommend to drill at the following location in the profile to verify the interpretation of the bedrock depth:

At 150m on the measuring line: bedrock expected at approx. 11m or 24m depth

Good samples are expected also with auger drilling since the overburden should be dominated by permafrost.

[8] matrix: fine sediments such as silt, sand, and mud in the gravel.

10 References

10.1 Literature

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

10.2 Maps

Government of Canada, Natural Resources Canada, Centre for Topographic Information

ftp://ftp.geomaticsyukon.ca/Mining

11 Qualification

Philipp Moll
Box 747, Dawson City, Yukon, Y0B 1G0
Phone: 001-867-993 3671 (Canada)
01149 (0)781 -9705893 (Germany)
E-mail: philipp.moll@arctic-geophysics.com

- Study of geology, University of Freiburg, Germany
- Visit of geophysical field courses, University of Karlsruhe, 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, and 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, filed at Yukon Mining Recorder
  b. Geophysical survey (45 field days) for Yukon Government: Yukon Geological Survey,
  c. http://virtua.gov.yk.ca:8080/lib/item?id=chamo:164867&theme=emr "2D resestivity / IP data release for placer mining and shallow quartz mining - Yukon 2010 : Los Angeles Creek, Wolf Creek, Ladue River, and Rice Creek ; Philipp Moll and Stefan Ostermaier"

12 Confirmation

I have prepared this report entitled "Geophysical Survey with 2D Resistivity for Placer Investigation, Dawson Range 2013" for assessment credit, and have collected and reviewed the data. The survey was carried out by Arctic Geophysics Inc.

Schutterwald, Germany, 6th November 2013
"Signed" Philipp Moll

Philipp Moll

13 Addendum

13.1 Cost

Arctic Geophysics Inc.

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Diamond Tooth Resources

PO Box 1170
Marsh Lake Yukon
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Phone: 867-993-3671 (Cell)
info@arctic-geophysics.com
www.arctic-geophysics.com

Survey Location: ID 00967

Invoice # 20131019_E

Date: 19th Oct, 2013

Quantity	Description	Amount $CAN
Geophysical Survey		
1day	Geoelectrical 2D-Resistivity Imaging System + Operator, 880.--/day	880.--
	Data processing, Documentation	120.--
	NET Amount	$ 1 000.--
GST Number 846363216RT0001	**G.S.T. (5%)**	$ 50.--
Total Due		**$ 1 050.50**

13.2 GPS-Data

GPS-Data

Line05

Electrode No.	Location in Profile [m]	GPS-Coordinates ddd° mm' ss.s'' WGS 1984	GPS-Accuracy [m]	Post [*]
1	0	N64 01 15.6 W139 12 37.2	3	*
2	5	N64 01 15.7 W139 12 37.2	3	
3	10	N64 01 15.8 W139 12 37.1	3	
4	15	N64 01 16.0 W139 12 37.1	3	
5	20	N64 01 16.1 W139 12 37.1	3	
6	25	N64 01 16.1 W139 12 37.1	3	
7	30	N64 01 16.3 W139 12 37.1	3	
8	35	N64 01 16.4 W139 12 37.2	3	
9	40	N64 01 16.6 W139 12 37.2	3	
10	45	N64 01 16.7 W139 12 37.3	3	
11	50	N64 01 16.8 W139 12 37.3	3	
12	55	N64 01 16.9 W139 12 37.3	3	
13	60	N64 01 17.2 W139 12 37.4	3	
14	65	N64 01 17.3 W139 12 37.3	3	
15	70	N64 01 17.5 W139 12 37.5	3	
16	75	N64 01 17.6 W139 12 37.4	3	
18	85	N64 01 17.9 W139 12 37.4	3	
19	90	N64 01 18.1 W139 12 37.5	3	
20	95	N64 01 18.3 W139 12 37.6	3	
21	100	N64 01 18.6 W139 12 37.7	3	
22	105	N64 01 18.8 W139 12 37.6	3	
23	110	N64 01 18.9 W139 12 37.7	3	
24	115	N64 01 19.1 W139 12 37.7	3	
25	120	N64 01 19.3 W139 12 37.6	3	
26	125	N64 01 19.4 W139 12 37.7	3	
27	130	N64 01 19.5 W139 12 37.8	3	
28	135	N64 01 19.7 W139 12 37.8	3	
29	140	N64 01 19.9 W139 12 37.8	3	
30	145	N64 01 20.1 W139 12 37.8	3	
31	150	N64 01 20.2 W139 12 37.8	3	
32	155	N64 01 20.4 W139 12 37.8	3	
33	160	N64 01 20.5 W139 12 37.8	3	
34	165	N64 01 20.7 W139 12 37.8	3	
35	170	N64 01 20.8 W139 12 37.9	3	
36	175	N64 01 21.1 W139 12 37.9	3	
37	180	N64 01 21.3 W139 12 37.9	3	
38	185	N64 01 21.5 W139 12 38.0	3	
39	190	N64 01 21.6 W139 12 38.0	3	
40	195	N64 01 21.8 W139 12 38.0	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates ddd° mm' ss.s'' WGS 1984	GPS-Accuracy [m]	Post [*]
41	200	N64 01 22.0 W139 12 38.1	3	
42	205	N64 01 22.1 W139 12 38.2	3	
43	210	N64 01 22.3 W139 12 38.2	3	
44	215	N64 01 22.4 W139 12 38.4	3	
45	220	N64 01 22.5 W139 12 38.4	3	
46	225	N64 01 22.7 W139 12 38.5	3	
47	230	N64 01 22.9 W139 12 38.5	3	
48	235	N64 01 23.0 W139 12 38.7	3	*