

Arctic Geophysics Inc.



Geophysical Surveys • Prospecting • Consulting

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Geophysical Survey with 2D IP/Resistivity for Hardrock Investigation, Dawson Range 2013

LOCATION

Quartz Claims YE84067 and YE84065

N64 01 10.0 W138 48 27.4

FOR

Diamond Tooth Resources Inc

PO Box 1170

Marsh Lake Yukon

Y0B 1Y1

AUTHOR

Philipp Moll

WORK PERFORMED

Sept 3th 2013

DATE OF REPORT

Nov 6th 2013

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1 Introduction

This geophysical investigation was done for Charlie Brown, Diamond Tooth Resources Inc. The survey, using 2D IP/Resistivity, was conducted to prospect the tenures listed below for the localisation of possible targets for hardrock mining. The ground was tested with one 2D measuring line with a length of 475m; the depth of investigation is approximately 70m.

2 Placer Tenures

Grant Number	Name	Owner
YE84065	-	Diamond Tooth Resources Inc
YE84067	-	Diamond Tooth Resources Inc

3 Location

The quartz claim property is located app. 30km east of Dawson City in main valley of the Klondike River, map number 116B02.

4 Access

The exploration site was accessed directly from the Klondike Highway.

5 Goal

The IP/RES survey was focused on measuring and interpreting the following subsurface characteristics:

1. Concentrations of inducible minerals in bedrock
2. Depth and topography of bedrock
3. Sedimentary stratification
4. Permafrost conditions
5. Groundwater table
6. Mining/prospecting history

6 Geophysical Methods

Induced Polarization (IP): IP data are simultaneously taken when measuring Resistivity, with the same equipment and line staking. So these data are automatically at hand when using Resistivity. The IP model serves as basis for the interpretation of the mineral and petrologic conditions in hardrock. Thus, IP is an industry proven standard method for the detection of

primary mineral deposits. However, the IP model can also support the interpretation of the Resistivity profile.

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 METER¹
- 96 ELECTRODE CONTROL MODULES²
- 96 STAINLESS STEEL ELECTRODES³
- 480m MULTICORE CABLE: CONNECTOR SPACING: 5m⁴

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

IP/Resistivity

The data acquisition is carried out by the automatic activation of 4-point-electrodes by the measuring system. 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 IP data is getting noisy below approx. 50m depth because the sender current is limited to a 100 m Amp. The noise of the IP data in greater depth can significantly be decreased by using an IP-specific data acquisition mode that is much more time consuming.⁵

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.

¹ Constructed and produced by LGM (Germany)

² Ditto

³ Constructed and produced by GEOANALYSIS.DE (Germany)

⁴ Ditto

⁵ 1) Transition Resistivity between electrodes and ground lower than 1 Kilo Ohm; 2) More single 4point measurements to calculate the average of each data point (staking) etc.

7.3 Processing

Resistivity

The measured Resistivity/IP data were processed with the RES2DINV inversion program⁶.

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 customers⁷.

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

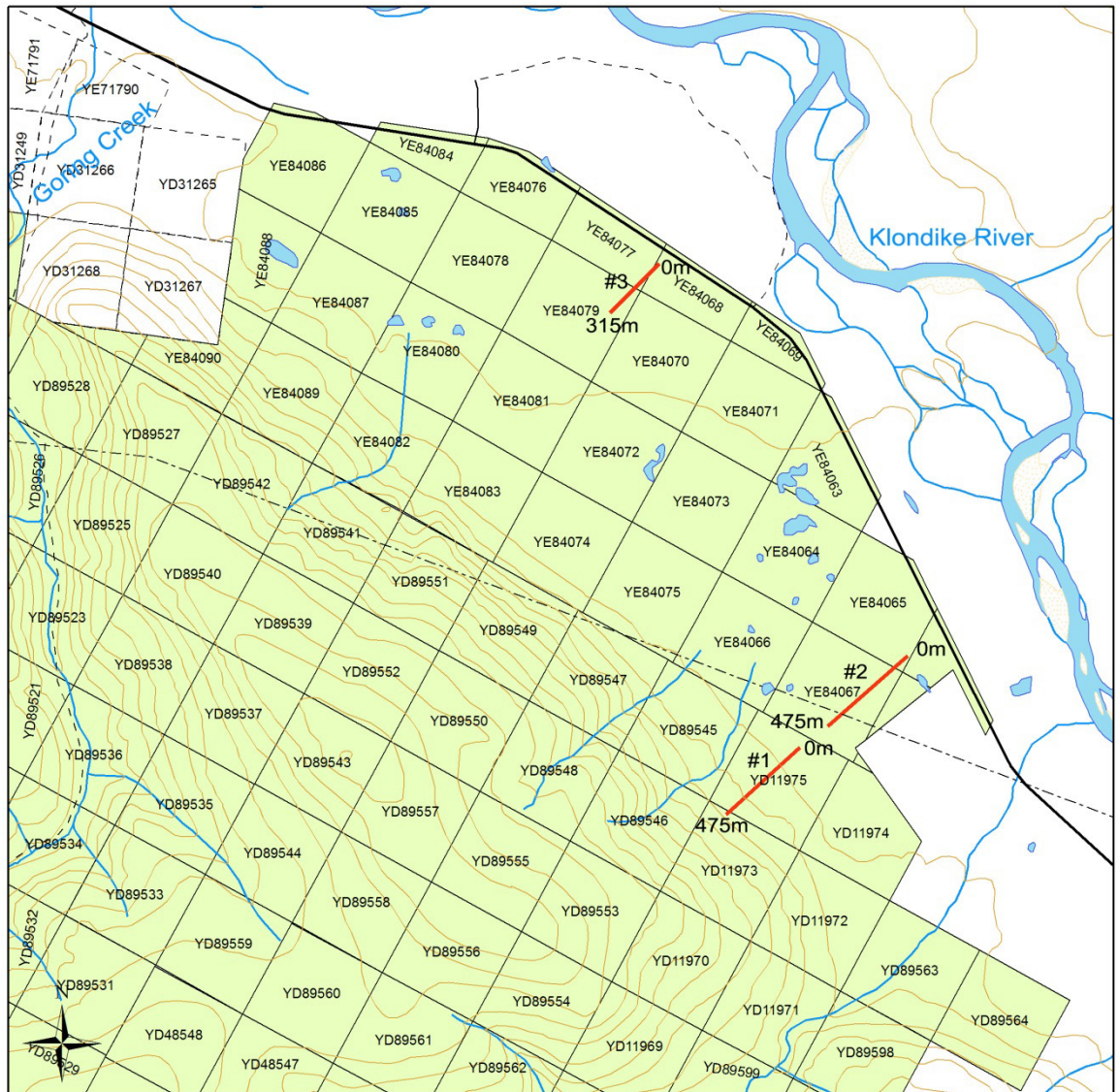
Preliminary Note!

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



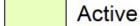

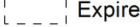





⁶ Produced by GEOTOMO SOFTWARE SDN. BHD (Malaysia)

⁷ 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 Map⁸



Legend

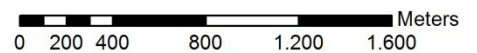
- | | |
|--|---|
|  measuring line | QUARTZ CLAIMS |
|  contour line |  Active |
|  watercourse |  Expired |
|  road | |
|  trail | |
|  cut line | |
|  waterbody | |
|  wetland | |

Survey Map

116B02 (Rabbit Creek)

Universal Transverse Mercator Zone7
North America Datum 1983

Scale 1:25,000



⁸ Government of Canada, Natural Resources Canada, Centre for Topographic Information
<ftp://ftp.geomaticsyukon.ca/Mining>

9.2 Profile: Interpretation, Recommendation

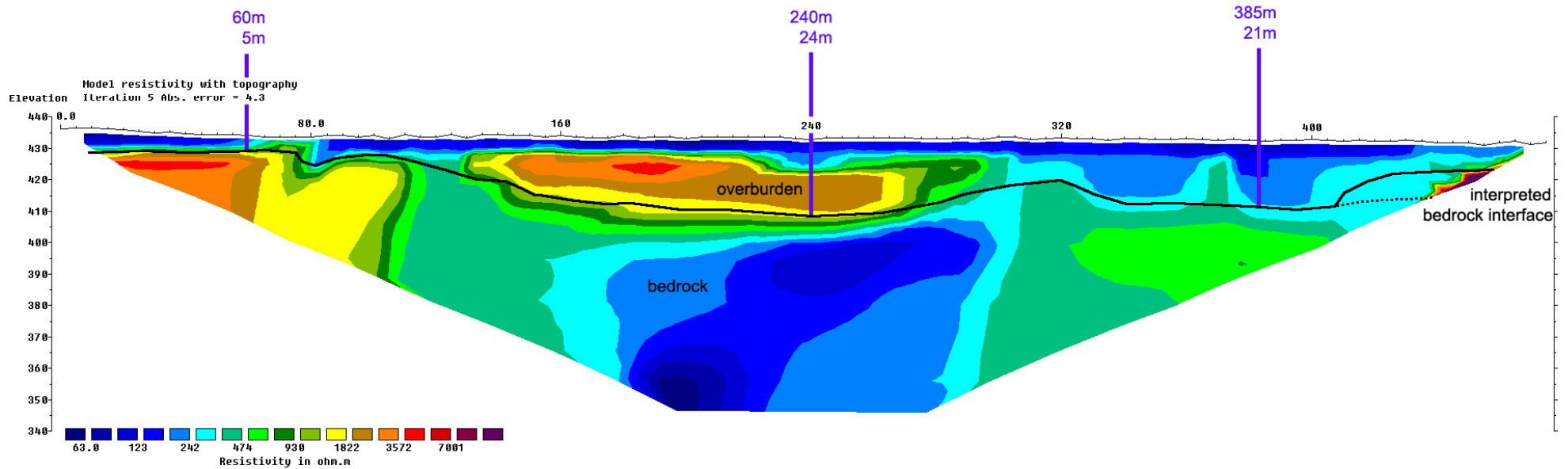
Line 02
 2D Resistivity, Schlumberger array
 96 Electrodes: spacing 5m, Horizontal resolution 2.5m
 Horizontal and vertical measure in [meter], Iteration error in [%]
 Vertical exaggeration in model section display = 1.00
 Data acquisition: Stefan Ostermaier, 3th Sept 2013
 Processing: Stefan Ostermaier, 7th Sep 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.

Line 02

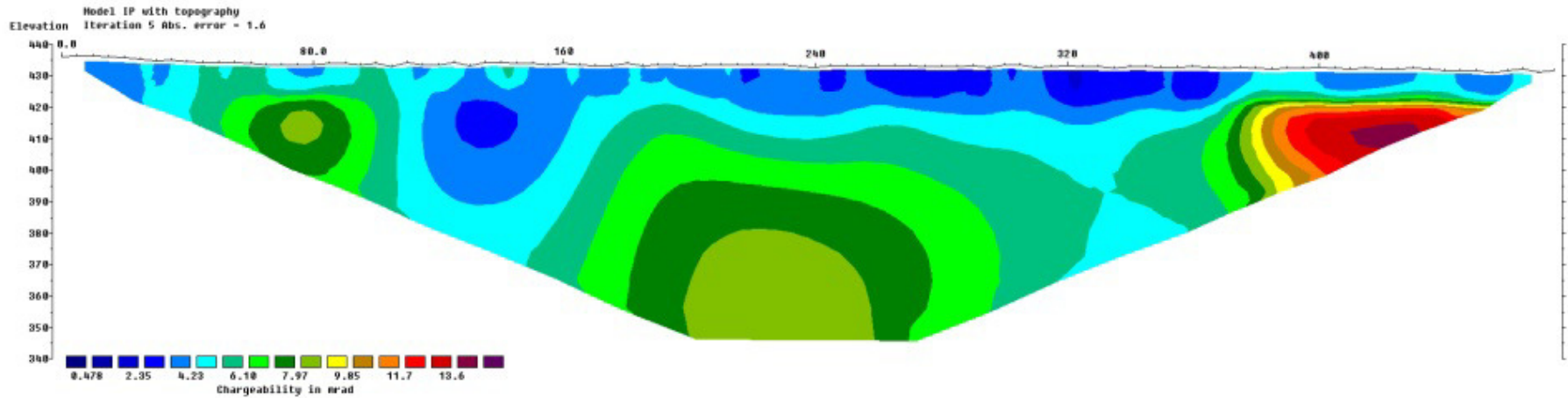
2D Induced Polarity, Schlumberger array
96 Electrodes; spacing 5m, Horizontal resolution 2.5m
Horizontal and vertical measure in [meter], Iteration error in [%]
Vertical exaggeration in model section display = 1.00
Data acquisition: Stefan Ostermaier, 3th Sept 2013
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This 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_02 indicates 4-24m of overburden on top of bedrock.

The overburden shows discontinuous resistivity data from 200 to 4 000 Ohm meter representing different amounts of permafrost: The blue data zone indicates thawed sediments; and the orange/red data zone should be fully frozen sediments. The overburden material might consist of muck on top of gravel. 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 matrix⁹. On the surface the overburden is thawed.

In the IP Profile, at 420m on the line and at 20m depth, the chargeability shows 13 milliradian. This data indicate the possible existence of a bedrock type containing IP-active accessory minerals. This data zone could represent a primary ore deposit containing sulfide minerals. This IP anomaly could show the beginning of an ore deposit being extended in south-west direction.

Recommendation

We recommend to drill or to dig a test pit at the following location in the profile to verify the interpretation of a possible ore deposit.

420m - bedrock expected at approx. 10m
- beginning of IP-active data zone expected at 12-15m depth

⁹ matrix: fine sediments such as silt, sand, and mud in the gravel.

10 References

10.1 Literature

Chesterman W. Ch. and Lowe K.E. Field Guide to Rocks and Minerals - North America, Chanticleer Press Inc. New York 2007

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Griffiths, D.H.,Turnbull, J. and Olayinka,A.I. Two dimensional resistivity mapping with a computer-controlled array, First Break 8: 121-129 (1990)

Griffiths, D.H. and Barker, R.D. Two-dimensional resistivity imaging and modeling in areas of complex geology. Journal of Applied Geophysics 29 : 211 - 226. (1993)

Keller, G.V. and Frischknecht, F.C. Electrical methods in geophysical prospecting. Oxford: Pergamon Press Inc. (1966)

Loke M.H. and Barker R.D. Rapid least-squares inversion of apparent resistivity pseudosections by a quasi-Newton method. Geophysical Prospecting 44: 131-152 (1996)

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

10.2 Maps

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

<ftp://ftp.geomaticsyukon.ca/Mining>

11 Qualification

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- 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 resistivity / 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 Nov 2013

"Signed" Philipp Moll



Philipp Moll

13 Addendum

13.1 Cost

Arctic Geophysics Inc.



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Diamond Tooth Resources

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Survey Location: YE84067 and YE84065

Invoice # 20131019_B

Date: 19th Oct, 2013

Quantity	Description	Amount \$CAN
Geophysical Survey		
1day	Geoelectrical 2D-Resistivity/IP 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

Line02

Electrode No.	Location in Profile [m]	GPS-Coordinates ddd° mm' ss.s'' WGS 1984	GPS-Accuracy [m]	Post [*]
1	0	N64 01 03.7 W138 48 41.7	3	*
2	5	N64 01 03.9 W138 48 41.5	3	
3	10	N64 01 04.0 W138 48 41.2	3	
4	15	N64 01 04.1 W138 48 41.0	3	
5	20	N64 01 04.2 W138 48 40.9	3	
6	25	N64 01 04.2 W138 48 40.7	3	
7	30	N64 01 04.4 W138 48 40.3	3	
8	35	N64 01 04.5 W138 48 40.0	3	
9	40	N64 01 04.5 W138 48 39.9	3	
10	45	N64 01 04.7 W138 48 39.5	3	
11	50	N64 01 04.8 W138 48 39.1	3	
12	55	N64 01 05.0 W138 48 38.9	3	
13	60	N64 01 05.1 W138 48 38.6	3	
14	65	N64 01 05.2 W138 48 38.4	3	
15	70	N64 01 05.4 W138 48 38.2	3	
16	75	N64 01 05.5 W138 48 38.1	3	
17	80	N64 01 05.6 W138 48 37.8	3	
18	85	N64 01 05.8 W138 48 37.5	3	
19	90	N64 01 05.9 W138 48 37.2	3	
20	95	N64 01 06.0 W138 48 37.0	3	
21	100	N64 01 06.2 W138 48 36.8	3	
22	105	N64 01 06.2 W138 48 36.6	3	
23	110	N64 01 06.3 W138 48 36.2	3	
24	115	N64 01 06.4 W138 48 35.9	3	
25	120	N64 01 06.7 W138 48 35.7	3	
26	125	N64 01 06.4 W138 48 35.4	3	
27	130	N64 01 06.6 W138 48 35.0	3	
28	135	N64 01 06.8 W138 48 34.9	3	
29	140	N64 01 06.9 W138 48 34.6	3	
30	145	N64 01 07.0 W138 48 34.3	3	
31	150	N64 01 07.1 W138 48 33.9	3	
32	155	N64 01 07.2 W138 48 33.6	3	
33	160	N64 01 07.3 W138 48 33.4	3	
34	165	N64 01 07.5 W138 48 33.2	3	
35	170	N64 01 07.6 W138 48 33.2	3	
36	175	N64 01 07.7 W138 48 32.9	3	
37	180	N64 01 07.8 W138 48 32.5	3	
38	185	N64 01 08.0 W138 48 32.3	3	
39	190	N64 01 08.1 W138 48 32.0	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates ddd° mm' ss.s'' WGS 1984	GPS-Accuracy [m]	Post [*]
40	195	N64 01 08.2 W138 48 31.7	3	
41	200	N64 01 08.4 W138 48 31.5	3	
42	205	N64 01 08.5 W138 48 31.2	3	
43	210	N64 01 08.7 W138 48 30.9	3	
44	215	N64 01 08.8 W138 48 30.6	3	
45	220	N64 01 08.9 W138 48 30.4	3	
46	225	N64 01 09.0 W138 48 30.2	3	
47	230	N64 01 09.1 W138 48 30.0	3	
48	235	N64 01 09.2 W138 48 29.7	3	
49	240	N64 01 09.3 W138 48 29.5	3	
50	245	N64 01 09.4 W138 48 29.2	3	
51	250	N64 01 09.5 W138 48 28.9	3	
52	255	N64 01 09.6 W138 48 28.6	3	
53	260	N64 01 09.7 W138 48 28.3	3	
54	265	N64 01 09.8 W138 48 27.9	3	
55	270	N64 01 09.9 W138 48 27.7	3	
56	275	N64 01 10.0 W138 48 27.4	3	
57	280	N64 01 10.1 W138 48 27.2	3	
58	285	N64 01 10.2 W138 48 27.0	3	
59	290	N64 01 10.4 W138 48 26.8	3	
60	295	N64 01 10.5 W138 48 26.5	3	
61	300	N64 01 10.6 W138 48 26.2	3	
62	305	N64 01 10.7 W138 48 26.0	3	
63	310	N64 01 10.8 W138 48 25.7	3	
64	315	N64 01 11.0 W138 48 25.4	3	
65	320	N64 01 11.1 W138 48 25.1	3	*
66	325	N64 01 11.2 W138 48 24.9	3	
67	330	N64 01 11.4 W138 48 24.7	3	
68	335	N64 01 11.5 W138 48 24.4	3	
69	340	N64 01 11.6 W138 48 24.1	3	
70	345	N64 01 11.7 W138 48 24.0	3	
71	350	N64 01 11.9 W138 48 23.8	3	
72	355	N64 01 12.0 W138 48 23.6	3	
73	360	N64 01 12.1 W138 48 23.3	3	
74	365	N64 01 12.2 W138 48 23.1	3	
75	370	N64 01 12.3 W138 48 22.8	3	
76	375	N64 01 12.5 W138 48 22.6	3	
77	380	N64 01 12.6 W138 48 22.4	3	
78	385	N64 01 12.7 W138 48 22.1	3	
79	390	N64 01 12.8 W138 48 21.8	3	
80	395	N64 01 12.9 W138 48 21.6	3	
81	400	N64 01 13.1 W138 48 21.4	3	
82	405	N64 01 13.2 W138 48 21.3	3	
83	410	N64 01 13.3 W138 48 21.0	3	
84	415	N64 01 13.4 W138 48 20.6	3	
85	420	N64 01 13.5 W138 48 20.3	3	
86	425	N64 01 13.7 W138 48 20.2	3	

Electrode No.	Location in Profile [m]	GPS-Coordinates ddd° mm' ss.s'' WGS 1984	GPS-Accuracy [m]	Post [*]
87	430	N64 01 13.8 W138 48 19.9	3	
88	435	N64 01 13.9 W138 48 19.7	3	
89	440	N64 01 14.0 W138 48 19.5	3	
90	445	N64 01 14.2 W138 48 19.2	3	
91	450	N64 01 14.3 W138 48 18.9	3	
92	455	N64 01 14.4 W138 48 18.7	3	
93	460	N64 01 14.5 W138 48 18.4	3	
94	465	N64 01 14.7 W138 48 18.3	3	
95	470	N64 01 14.8 W138 48 18.1	3	
96	475	N64 01 14.9 W138 48 18.0	3	*