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Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geophysical and Geological

TOTAL COST: $214,263

AUTHOR(S): R.A. Konst and F.C. Edmunds

SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-13-69

YEAR OF WORK: 2008

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): MTO Event No 4273468

PROPERTY NAME: Kemess

CLAIM NAME(S) (on which the work was done): CREEK (243067), 516786, 516848, 516854

COMMODITIES SOUGHT: gold, copper

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Omineca

NTS/BCGS: NTS 94E & 94D

LATITUDE: 57 ° 02 ' " **LONGITUDE:** 126 ° 47 ' " **(at centre of work)**

OWNER(S):
1) Northgate Minerals Corporation
2)

MAILING ADDRESS:
406-815 Hornby St, Vancouver, B.C., V6Z-2E6

OPERATOR(S) [who paid for the work]:
1) Northgate Minerals Corporation
2)

MAILING ADDRESS:
406-815 Hornby St, Vancouver, B.C., V6Z-2E6

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Andesite, quartz monzonite, dacite tuff, Hazelton Group, Takls Group, Black Lake Intrusive Suite, Lower Middle Jurassic
Quartz-sericite-pyrite, phyllic alteration
Cu-Au Porphyry, Kemess South

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 26748,
27083, 27365, 27675, 28213, 29049, 29848

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	26 Days - 9km2	516854/243067	13,650
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization	22.6 km	516854/243067	96,949
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock	51	516854 /243067	1,581
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)	27 km	516854/243067	45,360
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail	Heli access (42.3hrs)	516854/243067	38,493
Trench (metres)			
Underground dev. (metres)			
Other	Camp, fuel, and flights	516854/243067	18,230
		TOTAL COST:	**214,263**

ASSESSMENT REPORT – 2008 EXPLORATION PROGRAM
Geophysical and Geological Report

KEMESS PROPERTY:

NORTH DAM GRID PROGRAM

Claims Worked On: 243067, 516786, 516848, 516854

OMENICA MINING DIVISION
BRITISH COLUMBIA

CENTERED ON:

LATITUDE: 57° 02' North
LONGITUDE: 126° 47' West

NTS 94E & 94D

- Owned and Operated By-

Northgate Minerals Corporation

815 Hornby Street, Suite 406
Vancouver, British Columbia
V6Z 2E6, Canada

March 2009

F.C. Edmunds M.Sc. P.Geo.
R. A Konst B.Sc.

1.0 EXECUTIVE SUMMARY

This report describes exploration work that was completed on the CREEK (243067), 516786, 516848, and 516854 claims at the Kemess Property during 2008. The property is located just north of the McConnell Ranges approximately 430 kilometres northwest of Prince George in the Toodoggone Mining camp.

The goal of the North Dam Grid program was to examine the potential for near surface porphyry style mineral deposits that could be worked into the existing mine plan. This grid was established to cover favorable geology in an area where phyllicly altered quartz monzonite rock samples were collected in 2007. Other than the collection of these few rock samples, the only prior work done in this area was regional scale geological mapping and airborne geophysics.

The 2008 exploration work consisted of line cutting, a geophysical survey, and geological mapping and rock sampling. A total of 27 line kilometres were cut and mapped, and 23 km of this was surveyed. A total of 22 rock samples were submitted for analysis. Exploration work was carried out from July 21 to August 15/2008.

No significant gold or copper mineralization was identified in the program. However, geological mapping indicates an 100 by 400 m area of phyllicly altered quartz monzonite coincident with conductivity and chargeability IP anomalies extending at depth. A follow-up drill plan is recommended for 2009 to test this mineralization at depth.

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2.0 INTRODUCTION

The Kemess Property is in the mountains of north-central British Columbia, 430 kilometres northwest of Prince George, British Columbia at 57°02' north latitude and 126°47' west longitude. The property comprises four mining leases and 57 mineral claims, which together cover nearly 32,610 hectares. The Kemess South deposit currently supplies mill-feed to a 52,000 tonnes per day mill. During 2001 through 2007, Northgate discovered of a significant deposit at Kemess North and again at Kemess East. Despite a positive technical environmental assessment, the environmental assessment review panel did not recommend development of the Kemess North Project for cultural and political reasons. The project has since been abandoned. However, some potential exists for future discoveries that may be worked into the existing mine plan.

The Kemess Property is 100% owned and operated by Northgate Minerals Corporation. Infrastructure consists of an office and maintenance building, a 400-person camp, a mill building, access and service roads and an airstrip. Most supplies are trucked into the property via all-season road access from Mackenzie British Columbia, while power is available directly from BC Hydro over a 380 km power line.

Kemess occurs at the southern end of the Toodoggone Mining camp, which describes a collection of occurrences and deposits found in Mesozoic volcanic rocks of the eastern Stikine Arch. Large-scale structures are present in the area, with a major terrain boundary present just 25 kms east of the project area. The area is known for its Cu-Au porphyry deposits and low sulphidation epithermal Au-Ag vein deposits. Potential also exists for mesothermal vein deposits, skarn deposits, volcanic-associated massive sulphide deposits and red-bed Cu deposits.

The 2008 exploration work was focused on discovering near surface mineral deposits that could be worked into the existing mine plan. A limited program was targeted on an under explored area north of the tailings dam that showed promising geology during a cursory examination in 2007.

3.0 LOCATION AND ACCESS

The Kemess Property is located in the mountainous area east of the Spatsizi Plateau and west of the Swannell Ranges near Thutade Lake approximately 250 kilometres north-northeast of Smithers and 430 kilometres northwest of Prince George at 57°02' north latitude and 126°47' west longitude. The property, shown in Figure 1, spans the boundary between the 94E and 94D NTS sheets and lies in the Omineca Mining Division.

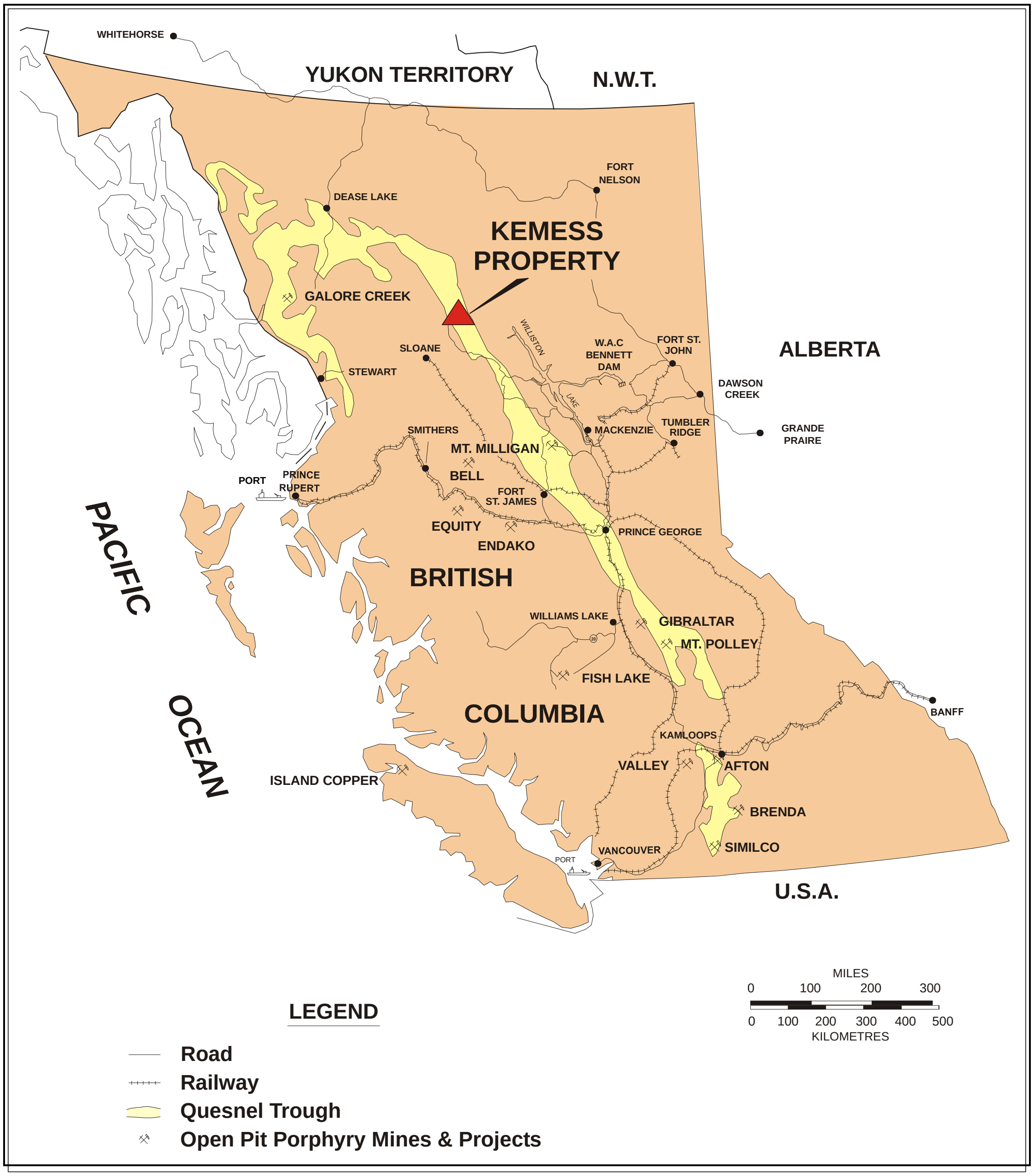


Figure 1 Kemess Property Location Map

Access to the project is provided by both air and road, as there are regularly scheduled year-round flights from Vancouver, Smithers, and Prince George to Kemess. All season road access is available from the town of Mackenzie or Ft. St. James via the Omineca Resources Access road.

Broad, open, drift and moraine covered valleys characterize the area, yielding to sub-alpine plateaus and rugged incised peaks and cirques. Elevations range from 1200 m to 1800 m, with the tree line occurring at 1500 m. The Kemess area climate is generally moderate, although snow can occur during any month. Temperatures range from -35^{oC} to 30^{oC} and average annual precipitation amounts to 890 mm. Commonly, snow does not leave the higher elevations until late June.

The North Dam Grid program was conducted on a rugged alpine to sub-alpine area a few kilometres north of the existing tailings dam. Program access was by helicopter only.

4.0 CLAIM DATA

The Kemess property is comprised of four mining leases (354991, 410732, 410741, 524240) and 57 surrounding and contiguous mineral claims which together cover nearly 32,610 hectares. All property mineral tenures are held by Northgate Mineral Corporation. The claims fall under the jurisdiction of the Omineca Mining Division of British Columbia located on NTS map sheets 94D15E&W, 94E006, 007,016 and 017.

Table 1 outlines the relevant claim information for the property as listed with BC Ministry of Energy, Mines and Petroleum Resources as of April 6, 2009. Figure 2 shows the individual claims comprising the contiguous block surrounding the Kemess South and Kemess North deposits. Figure 3 presents the individual claims worked on in the 2008 program. Work performed for this program was conducted on tenures CREEK (243067), 516786, 516848, and 516854 from July 21 to August 15, 2008.

Assessment work totaling $243,890.12 was applied to all the mineral claims listed Table 1 and shows their status after application of assessment work under Event Number 4273468. The assessment work applied consists of $214,260 of work done on property between July 21, 2008 to August 15, 2008 and $29,630.12 withdrawal from Northgate’s PAC account.

Table 1. Mineral Claims

Northgate Minerals Corporation

Free Miner Certificate No. 204327

Kemess Property, BC - Mineral Tenures

Summary	Tenures	Hectares	Acres
A. Mining Leases	4	3,483.33	8,607.31
B. Mineral Claims	57	29,126.22	71,970.89
	61	32,609.55	80,578.20

A. Mining Leases

Tenure No.	Tenure Type	District Lot	Title Holder	Map No.	Issue Date	Good To Date	Area (ha.)
354991	Mining Lease	L.7198, L.7199, L.7200, L.7201, L.7204, L.7207	Northgate Minerals Corp.	094E007	1997/sep/15	2009/sep/15	862.33
410732	Mining Lease	L.7032, L.7328	Northgate Minerals Corp.	094E007	2004/sep/29	2009/sep/29	950
410741	Mining Lease	L.7329	Northgate Minerals Corp.	094E007	2004/sep/29	2009/sep/29	106
524240	Mining Lease	L.7342	Northgate Minerals Corp.	094E	2005/dec/22	2009/dec/22	1565
4 Leases							**3,483.33**

B. Legacy and Cell Mineral Claims

Tenure No.	Tenure Type	Claim Name	Title Holder	Map No.	Issue Date	Good To Date	Area (ha.)
241014	Mineral Claim	SEM #1	Northgate Minerals Corp.	094E007	1989/jul/18	2019/dec/14	400
241959	Mineral Claim	NEK 3	Northgate Minerals Corp.	094E007	1990/may/03	2019/dec/14	500
241960	Mineral Claim	NEW KEMESS 3	Northgate Minerals Corp.	094E007	1990/may/03	2019/dec/14	375
242573	Mineral Claim	DU 2	Northgate Minerals Corp.	094E007	1990/aug/02	2019/dec/14	500
242574	Mineral Claim	NEK 4	Northgate Minerals Corp.	094E007	1990/aug/01	2019/dec/14	350
243063	Mineral Claim	CAN 1	Northgate Minerals Corp.	094E007	1991/feb/02	2019/dec/14	500
243064	Mineral Claim	DUNC 1	Northgate Minerals Corp.	094E007	1991/feb/01	2019/dec/14	100
243065	Mineral Claim	DUNC 2	Northgate Minerals Corp.	094E007	1991/feb/01	2019/dec/14	100
243066	Mineral Claim	DUNC 3	Northgate Minerals Corp.	094E007	1991/feb/01	2019/dec/14	150
243067	Mineral Claim	CREEK	Northgate Minerals Corp.	094E007	1991/feb/02	2019/dec/14	300
243440	Mineral Claim	ALISON 1	Northgate Minerals Corp.	094E007	1991/may/14	2019/dec/14	500
304706	Mineral Claim	GOZ 1	Northgate Minerals Corp.	094E007	1991/sep/21	2019/dec/14	25
304707	Mineral Claim	GOZ 2	Northgate Minerals Corp.	094E007	1991/sep/21	2019/dec/14	25
310076	Mineral Claim	DUN 1	Northgate Minerals Corp.	094E007	1992/may/31	2019/dec/14	225
310077	Mineral Claim	DUN 2	Northgate Minerals Corp.	094E007	1992/may/31	2019/dec/14	225
310078	Mineral Claim	DUN 3	Northgate Minerals Corp.	094E007	1992/may/31	2019/dec/14	225
355408	Mineral Claim	MILL CREEK 4	Northgate Minerals Corp.	094E007	1997/apr/23	2019/dec/14	25
401957	Mineral Claim	UN 1	Northgate Minerals Corp.	094E007	2003/apr/29	2019/dec/14	50
403629	Mineral Claim	BEAR 6	Northgate Minerals Corp.	094D097	2003/jul/09	2019/dec/14	500
403631	Mineral Claim	BEAR 8	Northgate Minerals Corp.	094D097	2003/jul/09	2019/dec/14	500
403633	Mineral Claim	BEAR 12	Northgate Minerals Corp.	094D097	2003/jul/09	2019/dec/14	500
403635	Mineral Claim	BEAR 16	Northgate Minerals Corp.	094D097	2003/jul/09	2019/dec/14	375
405949	Mineral Claim	LAT 1	Northgate Minerals Corp.	094E007	2003/oct/05	2019/dec/14	25
414229	Mineral Claim	DUNC 4	Northgate Minerals Corp.	094E007	2004/sep/15	2019/dec/14	25
414230	Mineral Claim	DUNC 5	Northgate Minerals Corp.	094E007	2004/sep/15	2019/dec/14	25
414231	Mineral Claim	UN 2	Northgate Minerals Corp.	094E007	2004/sep/16	2019/dec/14	25
414232	Mineral Claim	UN 3	Northgate Minerals Corp.	094E007	2004/sep/16	2019/dec/14	25
506817	MCX	TLK 1	Northgate Minerals Corp.	094D	2005/feb/11	2019/dec/14	423.346
506822	MCX	TLK 2	Northgate Minerals Corp.	094D	2005/feb/11	2019/dec/14	423.244

Tenure No.	Tenure Type	Claim Name	Title Holder	Map No.	Issue Date	Good To Date	Area (ha.)
506824	MCX	TLK 3	Northgate Minerals Corp.	094D	2005/feb/11	2019/dec/14	387.724
506825	MCX	TLK 4	Northgate Minerals Corp.	094E	2005/feb/11	2019/dec/14	281.83
515677	MCX		Northgate Minerals Corp.	094E	2005/jun/30	2019/dec/14	1108.035
515678	MCX		Northgate Minerals Corp.	094E	2005/jun/30	2019/dec/14	1443.31
515683	MCX		Northgate Minerals Corp.	094E	2005/jun/30	2019/dec/14	669.335
515686	MCX		Northgate Minerals Corp.	094D	2005/jun/30	2019/dec/11	1427.856
515693	MCX		Northgate Minerals Corp.	094D	2005/jun/30	2019/dec/14	1534.1
515694	MCX		Northgate Minerals Corp.	094E	2005/jun/30	2019/dec/14	1353.164
516786	MCX		Northgate Minerals Corp.	094E	2005/jul/11	2019/dec/14	1391.637
516814	MCX		Northgate Minerals Corp.	094D	2005/jul/11	2019/dec/14	863.906
516817	MCX		Northgate Minerals Corp.	094D	2005/jul/11	2019/dec/14	440.555
516848	MCX		Northgate Minerals Corp.	094E	2005/jul/11	2019/dec/14	105.661
516854	MCX		Northgate Minerals Corp.	094E	2005/jul/11	2019/dec/14	1197.161
516860	MCX		Northgate Minerals Corp.	094D	2005/jul/11	2019/dec/14	1075.379
543635	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	897.5519
543638	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	861.6243
543646	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	439.5708
543648	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	105.5009
543654	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	175.891
543659	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	421.784
543660	MCX		Northgate Minerals Corp.	094E	2006/oct/19	2019/dec/14	351.4827
544419	MCX		Northgate Minerals Corp.	094E	2006/oct/25	2019/dec/14	70.3507
551537	MCX		Northgate Minerals Corp.	094E	2007/feb/09	2019/dec/14	105.4387
571954	MCX		Northgate Minerals Corp.	094D	2007/dec/14	2019/dec/14	1340.8477
571956	MCX		Northgate Minerals Corp.	094D	2007/dec/14	2019/dec/14	988.4348
571957	MCX		Northgate Minerals Corp.	094D	2007/dec/14	2019/dec/14	988.868
571958	MCX		Northgate Minerals Corp.	094D	2007/dec/14	2019/dec/14	847.3708
571959	MCX		Northgate Minerals Corp.	094D	2007/dec/14	2019/dec/14	830.261
57 Claims							**29,126.22**

Table 1: Mineral claim data for the Kemess property as listed with B.C. Ministry of Energy, Mines and Petroleum Resources on April 6, 2009. Good to dates indicated above are subject to MEMPR approval of assessment report filed under Event No. 4273468.

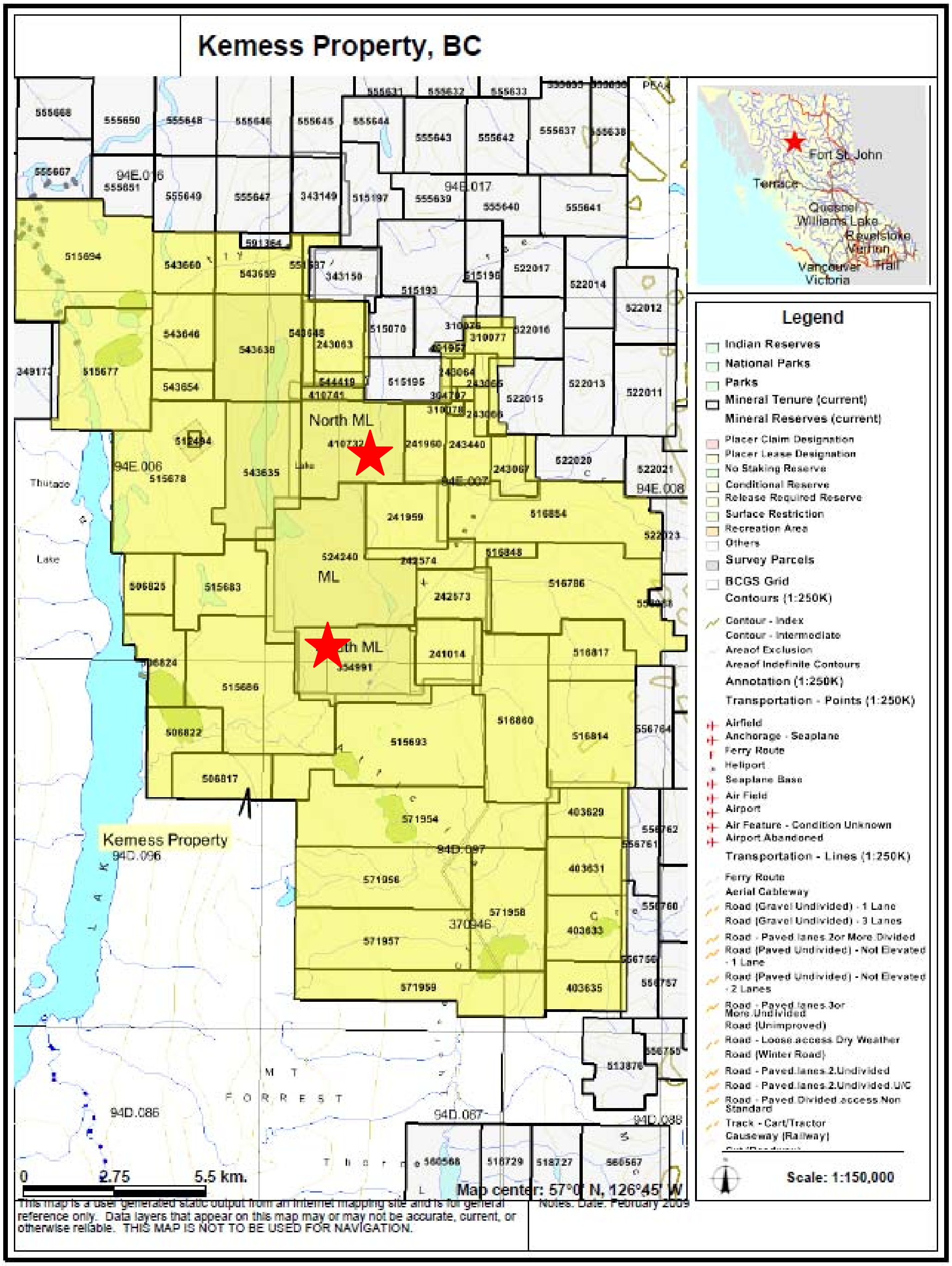


Figure 2 Kemess Property Claim Block and Deposits.

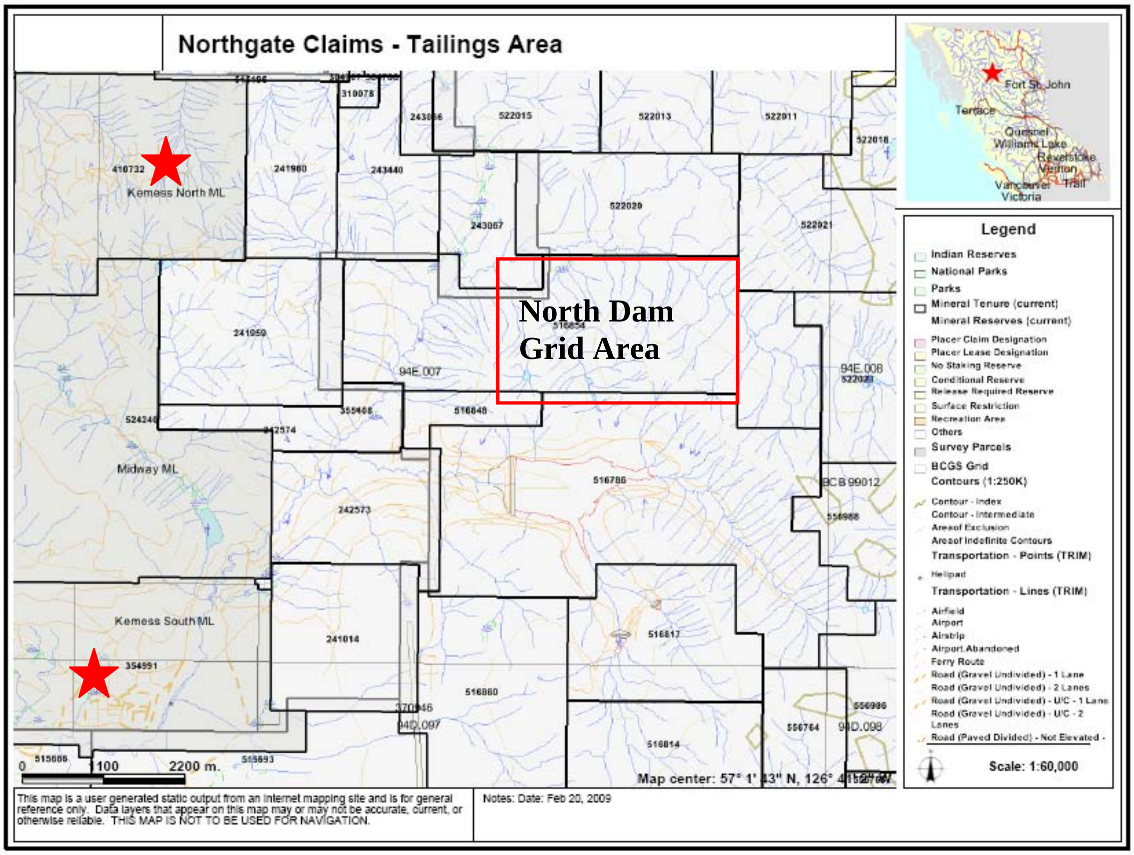


Figure 3 Detailed Work Area Claim Map (as of February 2009).

5.0 DISTRICT EXPLORATION AND MINING HISTORY

The earliest reports of exploration activity in the area date back to the discovery of placer gold at the mouth of McConnell Creek in 1889. Several years later there was a brief staking rush in 1907 and prospecting remained active in the area through the early 1920's resulting in a placer discovery at McClair Creek. Cominco Ltd. was active in the area in the 1930's exploring for base metals. During this period Emile Bronlund discovered and staked several skarn showings; the Cairn showing is a nearby occurrence from this era that is located on Duncan Ridge, 4 kms west of Kemess North.

In 1966 Kennecott focused on the area searching for Cu-porphyry systems using stream geochemical techniques and prospecting; this work resulted in claim staking and field work on several prospects including Kemess North, Pine, Fin, Chapelle (aka Baker), Shasta and Lawyers. The latter three deposits are gold-silver epithermal vein systems that eventually produced during the early 1980's.

In 2003 Fugro Airborne Surveys carried out a regional airborne multi-parameter survey over the Toodoggone region, under a funding agreement with the Geological Survey of Canada, BC Geological Survey and local exploration companies including Northgate Minerals.

Property and Regional scale mapping was compiled by Diakow in 2001 and Massey et.al. in 2003. No detailed exploration work, other than limited prospecting, was completed on the North Dam Grid area prior to this program.

6.0 REGIONAL GEOLOGY

Mesozoic arc-related volcanic rocks that comprise the eastern margin of the Intermontane Belt underlie the district over an area measuring 100 by 40 kms. The oldest rocks in the belt are Permian Asitka Group, which are disconformably overlain by upper Triassic Takla Group, which are in turn unconformably overlain by lower-middle Jurassic Hazelton Group; overlapping all these assemblages to the west are upper Cretaceous Sustut Group sediments. The lithologic units comprising the stratigraphic succession are described in Table 2 below.

Table 2. Regional Stratigraphy (Cope 1992)

Age	Lithostratigraphic Unit	Description
Cretaceous	Sustut Group	Sustut rocks grade from Brothers Peak Formation conglomerate, sandstone, mudstone with minor tuffaceous units down to the basal Tango Creek Formation polymictic conglomerate, sandstone, mudstone with minor lignite seams.
L-M Jurassic	Hazelton Group	Uppermost unit, Smithers Formation is dominated by greywacke, lithic sandstone, siltstone, tuffaceous shale, volcanic breccia, conglomerate and limestone. Below lies the Nilkitkwa Formation, which is mainly shale, greywacke, andesitic-rhyolitic tuff with minor limestone. In the Kemess area the quartz phyric volcaniclastic rocks of the Toodoggone Formation are believed to be correlative to the Nilkitkwa. The basal assemblage, Telkwa Formation comprises basaltic to rhyolitic pyroclastic and flow rocks.
U. Triassic	Takla Group	Highest units are Moosevale Formation augite porphyry, breccia, sandstone and mudstone. Central assemblage is Savage Mtn. Formation comprised of flows and pyroclastic augite porphyritic volcanic rocks. Base of the exposed sequence is Dewar Formation argillite, limestone and siltstone.
Mid Pennsylvanian - Permian	Asitka Group	Uppermost units are dominated by limestone and tuff, which give way to a middle assemblage of basaltic flows and rhyolite. The lowermost units are basalt, argillite,chert and limestone.

Intrusive rocks are prevalent in the area and have been categorized as late Triassic Alaskan-type ultramafics such as pyroxene diorite, hornblende gabbro and pyroxenite. Economically more significant are the early Jurassic intrusives of the Black Lake suite, which are granodiorite, hornblende diorite, pyroxene quartz-diorite, quartz-monzonite and quartz monzodiorite. Age dates of important plutonic masses are shown in Table 3.

Table 3. Pluton Age Dates (Diakow 2001- 2004)

UTM (E)	UTM (N)	Pluton	U-Pb (zircon)	Notes
639009	6327545	Atty	205.1+/-0.7(z)	Sample from Northgate; pluton adjacent to Cu-Au mineralization on Atty property; intrusion probable sinistral offset of ca 194.5 granodiorite (96LDi25.1)
		Sovereign	202.7+1.9/-1.6(z)	Porphyritic quartz monzonite (Reference Mortensen et.al., 1995; CIM Special Vol. 46, pg154-156.)
		Maple Leaf	199.6 +/- 0.6(z)	Hosts The Kemess South Cu-Au Deposit
		Kemess North Monzonite	202 +/-?(z)	Hosts The Kemess North Cu-Au Deposit*
636408	6326349	Kemess North Syenite	198.3+/-0.8(z)	Corresponds with Northgate DDH KN02-03, 508-514m; post-mineral dike cutting porphyry Cu-Au mineralization
		Duncan Lake	197.3 +1.7/-0.9(z)	
634445	6321726	Kemess Centre	196.3+1.3/-2.9(z)	Sample from drill core DDH KC03-01 346 to 352m
631152	6325806	Cairn	190.3+0.6/-1.8(z)	Sample from Northgate; pluton on Duncan Ridge, spatially associated with Cu-Magnetite skarn

The map shown in Figure 4 from Massey et. al. 2003 shows the district geology, major intrusive masses, and deposits. **unpublished*

7.0 STRUCTURAL SETTING

For the most part the volcanic Mesozoic assemblages are upright shallowly dipping flat-lying sequences crosscut by high angle north to northwest trending faults. Significant structures are the Finlay-Ingenika and Moosevale fault systems, which bound the eastern margin of the belt. These structures are dextral strike-slip features that are related to the terrain bounding faults between the Intermontane and Omineca belts.

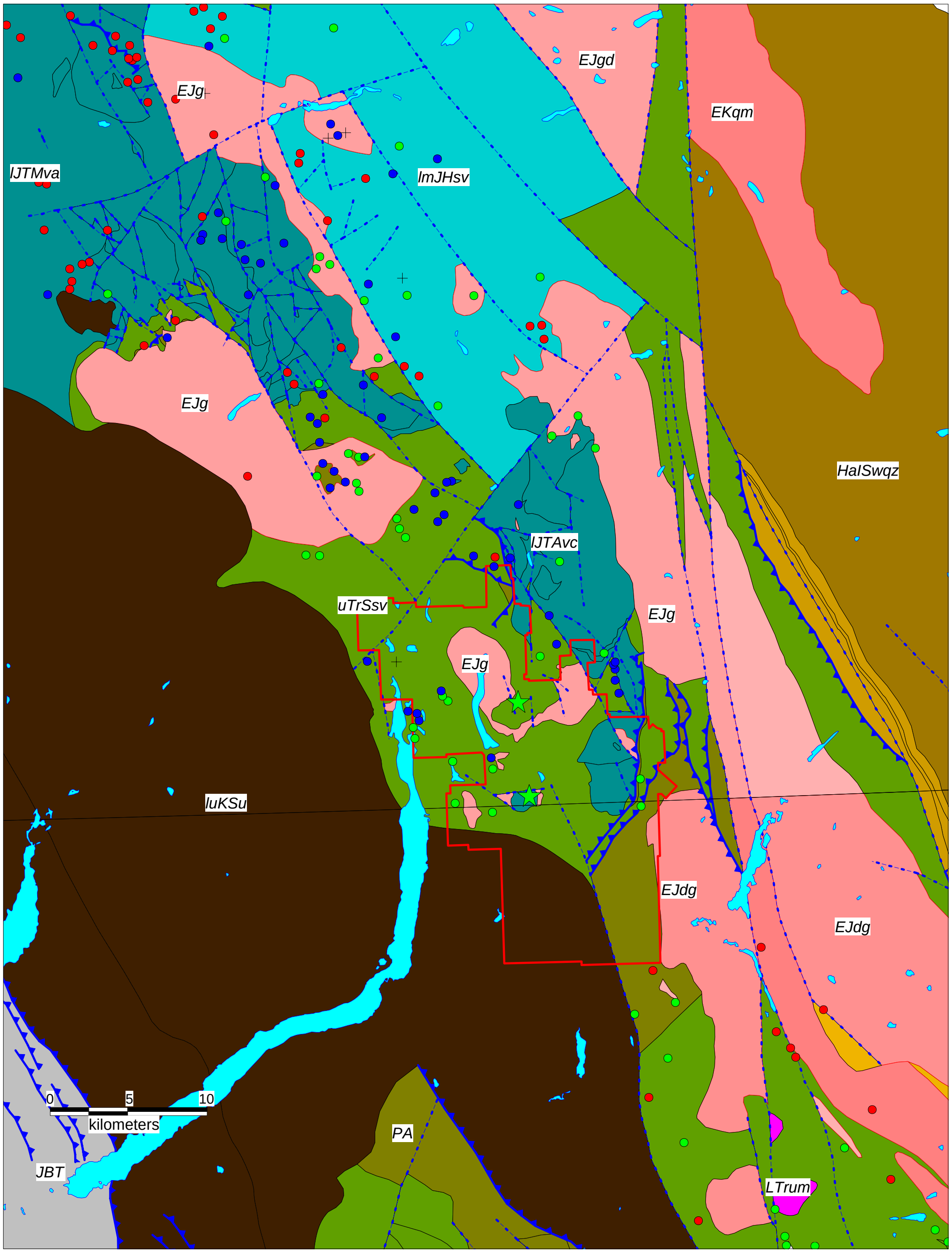


Figure 4 Regional Geology (after Massey et.al. 2003).

Minfile Occurrences plotted by colour showing principal commodities as follows: gold – red, silver – blue, and copper – green. Geologic units as follows: PA – Late Pennsylvanian -Permian Asitka Group, LTum – Late Triassic Ultra mafic intrusions, uTrSsv – Upper Triassic Takla Group, lJT – Lower Jurassic Hazleton Group, luKSu – Upper Cretaceous Sustut Group, EJ – Early Jurassic Black Lake Intrusives,

Local to Kemess are the Duncan and Saunders Faults, which are north-northwest normal block fault structures. Thrust faulting is present in the district and is interpreted as Eocene or younger; displacement believed to be towards the northeast and effects rocks from the Asitka up to Sustut sediments.

The district represents the results of three superimposed volcanic arc building stages that began in the upper Paleozoic with the Asitka Group. Unconformably overlying the Asitka, Takla Group marine volcanic and sedimentary successions dominated until the lower-middle Jurassic, when continental, quartz- normative volcanism began with the deposition of the Hazelton Group-Toodoggone Formation sequences. The plutonic rocks of the Black Lake suite are coeval with the Toodoggone sequence and are likely co-magmatic. Block faulting has juxtaposed and exposed panels of varying depth from the magmatic and volcanic systems. The structures and intrusives likely had a strong influence on the eventual positioning of volcanic centers.

8.0 PROPERTY GEOLOGY

8.1 INTRODUCTION

The Kemess property is underlain by upper Triassic (Takla Group) andesitic to basaltic volcanics, which are unconformably overlain by lower Jurassic (Toodoggone Formation) dacitic fragmental volcanics. Stocks, dykes and possible sills of quartz monzonite/quartz diorite composition have intruded the Takla succession and are also lower Jurassic in age. Structurally the area is transected by steeply dipping north to northwest trending normal faults. Significant faulting has occurred prior to Toodoggone deposition as represented by facies changes within the basal sequence. A local coarse conglomerate occupies the lowest portions while finer, more angular epiclastic deposits mark the unconformity in higher blocks.

The North Dam Grid area is underlain mainly by Hazetleton Group, Toodoggone Formation fragmental volcanics in the west, with a central fault bound block of Black Lake granodiorite, and more toodogone overthrusted by Takla and Asitka units in the east. (figure 5).

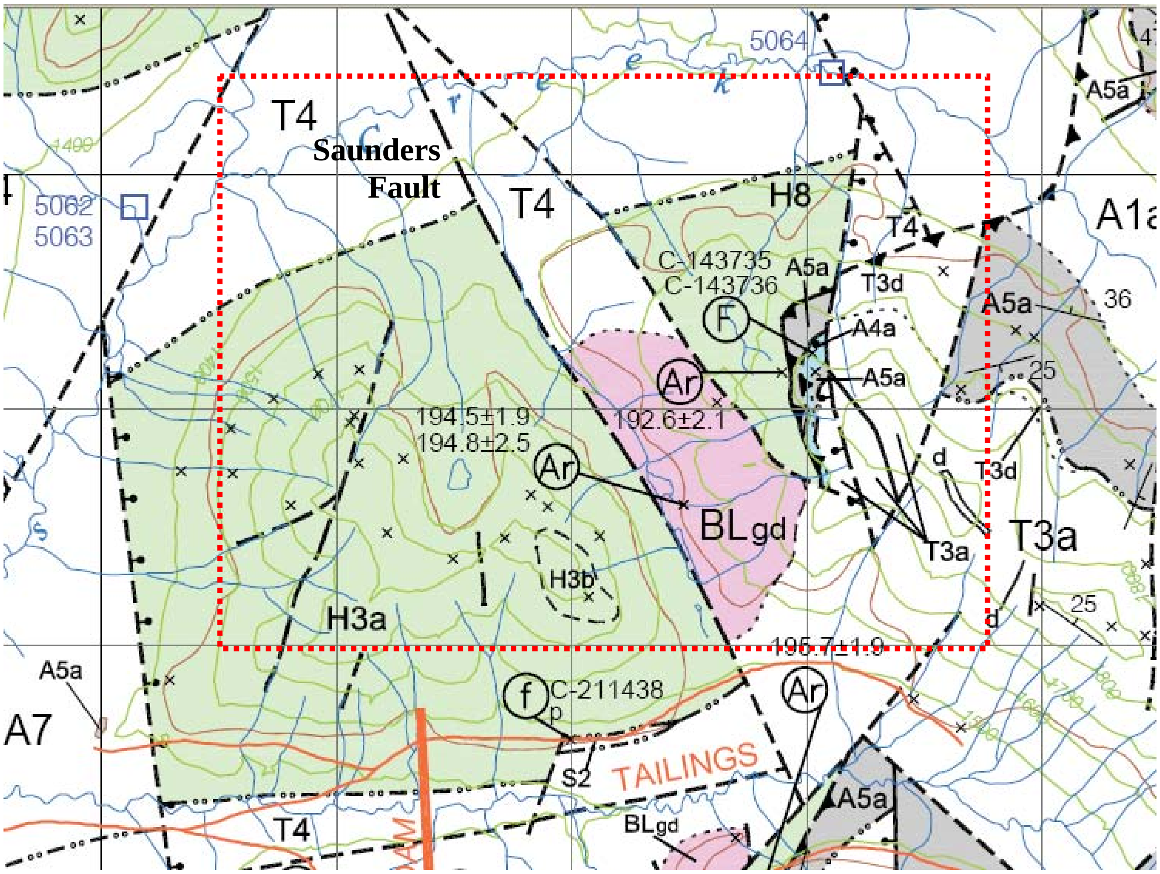


Figure 5 Geology Underlying Work Area – (Diakow 2001)

Geology Legend

Early Jurassic
BL - Black Lake Intrusives
Lower Jurassic
H,- Hazelton Group -Subaerial andesite to dacite flows and tuffs, rare basalt and rhyolite flows: subordinate volcanic siltstone to conglomerate.
Upper Triassic
T - Takla Group - Submarine basalt to andesite flows and tuffs, minor limestone
Lower Permian
A -Asitka Group- Limestone, chert, argillite

8.2 LITHOLOGY

Andesitic Volcanics (Takla Group -T3a, T3c,T3d, T4)

The property is predominantly underlain by a thick (>1000m) succession of andesitic flows and volcanic breccias. Takla volcanic rocks host a significant portion of the Au-Cu mineralization in the Kemess South and North deposits.

The andesite and basalt flows exhibit textures ranging from fine grained and massive to porphyritic with medium grained and mostly phyric, subhedral augite phenocrysts. Less common are phenocrysts of plagioclase. The fine-grained matrix is mostly comprised of plagioclase, quartz, and chlorite. The plagioclase is usually sericitized. Less common intersections of auto-brecciated flows occur as coarse sub-rounded andesitic clasts within both phyric and finer grained flows.

On surface, exposed in the North Kemess cirque headwalls and some upper intersections of drill intercepts is a bladed feldspar porphyritic unit. It exhibits a very well developed porphyritic texture with bladed felted laths of plagioclase up to 1.5 cm long within a finer grained dark gray matrix. Its texture suggests a hypabyssal origin or possibly an extrusive dome type emplacement.

Takla Group flows and tuffs characterized by augite and plagioclase phenocrysts dominate the peaks on the eastern portion of the North Dam Grid area. The Northern part of the grid area is covered by vegetation, alluvium, and glacial drift that is probably underlain by Takla Group volcanics.

Dacitic Polylithic Fragmental (Hazelton Gp,Toodoggone Fmn – H3a, H3b, H8, H9, H10)

Local Toodoggone volcanics overlying the Kemess South area have been dated at 194+/-0.4 Ma. In contrast, mantling the northern and eastern limits of the Kemess North area, is a matrix supported polylithic fragmental volcanic unit dated at 199.0 +/-0.3 Ma. Sub-rounded angular coarse fragments of granitic intrusive, andesite, and chert occur within a siliceous (dacite) matrix. Lithic proportion to matrix is inconsistent ranging from 1-30% volumetrically, with clast size varying from lapilli to blocks. The matrix is fine-grained, comprised of 10-30% medium grained feldspar and diagnostic (5%) quartz phenocrysts. Magnetite is common as an accessory mineral occurring as very fine-grained disseminations as are distinctive zeolite-calcite veinlets. Propyllitic (epidote-calcite-pyrite) alteration is dominant within the fragmental, however narrow (10-20m) zones of phyllic (quartz-sericite-pyrite) alteration are present near discordant contacts with the Takla Group. The phyllic sections can carry anomalous gold concentrations.

The Polylithic Fragmental Dacite is an enigmatic unit as it shows field relations suggestive of both an extrusive and intrusive emplacement mechanism. This unit covers the majority of the North Dam Grid area. Diamond drill sections in East Cirque show a WNW striking steeply south dipping irregular contact between mineralized Takla andesite and the dacitic fragmental, and in one instance quartz-phyric polylithic fragmental occurs within monzonite. In Central Cirque an unaltered flat lying dacitic fragmental unit overlies quartz-sericite altered mineralized Takla Group. At the Nugget Zone a thin (5 metre) zone of the dacitic fragmental crosscuts Takla Group andesite. Commonly present within the dacitic fragmental are inclusion-rich irregular granitoid masses typically logged as crowded feldspar porphyry or monzonite. These masses are interpreted to be younger sub-volcanic intrusives related genetically to the Toodoggone Formation.

Quartz Monzonite/Quartz Granodiorite (Black Lake Intrusives – BLqm, BLgd)

These intermediate intrusive units are comprised of subhedral phenocrysts of 50% plagioclase and <10% quartz set in a groundmass of quartz-feldspar-chlorite +/- biotite with accessory minerals including; magnetite, apatite, carbonate, rutile, ilmenite, sphene. The main quartz monzonite mass beneath East Cirque hosts the bulk of the Au/Cu mineralization at Kemess North. The Kemess South deposit is mainly comprised of the 199.6 +/- 0.6Ma Maple Leaf intrusion. A 194.5 +/-1.9 Ma granodiorite dominates the central portion of the North Dam Grid. A 100 x 400 m area of quartz monzonite is exposed in a gully in the northeast-central area of the grid. Several narrow dykes ranging in composition from quartz monzonite to granodiorite in composition were noted on the eastern portion of the grid.

Post-Mineral Dykes

Post-ore dykes, including feldspar porphyry and minor mafic varieties cross cut Takla volcanics. The feldspar porphyry dykes also cross cut the Jurassic-Toodoggone fragmental unit. The feldspar dykes commonly exhibit pervasive dark pink hematite within the matrix and as staining of the medium grained feldspar phenocrysts. Due to the pink colour of the feldspars, these dykes take the field term syenite and are generally barren and unaltered. The relationship of the feldspar dykes with the larger quartz diorite stocks is not clear, however they appear temporally late in the sequence of events.

Mafic dykes are generally thin at < 1 to 4 metres wide, dark green, commonly amygdaloidal, and barren of sulphides and veining. Observations from regional mapping suggest they are related to the volcanic strata interbedded within Sustut Group sedimentary rocks and are interpreted as Cretaceous.

Also found on the property, cross-cutting Takla volcanics but not encountered cross-cutting porphyry mineralization, are megacrystic quartz rhyolite porphyry dykes. These dykes have conspicuous quartz phenocryst up to 2 centimeters in an off white to pale green groundmass.

8.3 STRUCTURE

Due to the lack of bedding and/or marker horizons, the inclination of the massive thick succession of volcanics is difficult to ascertain but probably reflects the regional trend of flat lying Mesozoic assemblages.

At least three steeply dipping, northwest trending normal faults have been inferred from surface mapping and drilling to transect the Kemess property. Fault spacing ranges from 500 and 1500 metres and they are generally parallel to the regional scale Duncan and Saunders Faults. Depth to the Hazleton/Takla unconformity appears to step down southwest across these structures. Both the Kemess North and South deposits are bound at their northern extents by steep east-west faults; a normal fault at Kemess North and a reverse fault at Kemess south.

The North Dam Grid area is transected by the Saunders Faults, a major NNW trending normal fault (figure 5). The eastern part of the grid is traversed by a major westward thrust fault.

9.0 EXPLORATION WORK

9.1 LINE CUTTING

A total of 27 kilometres of cut lines were created over the North Dam grid area and are shown in Figure 6. The five-man Johnny Line Cutting crew from Takla Landing performed the work from July 21 to August 1/2008

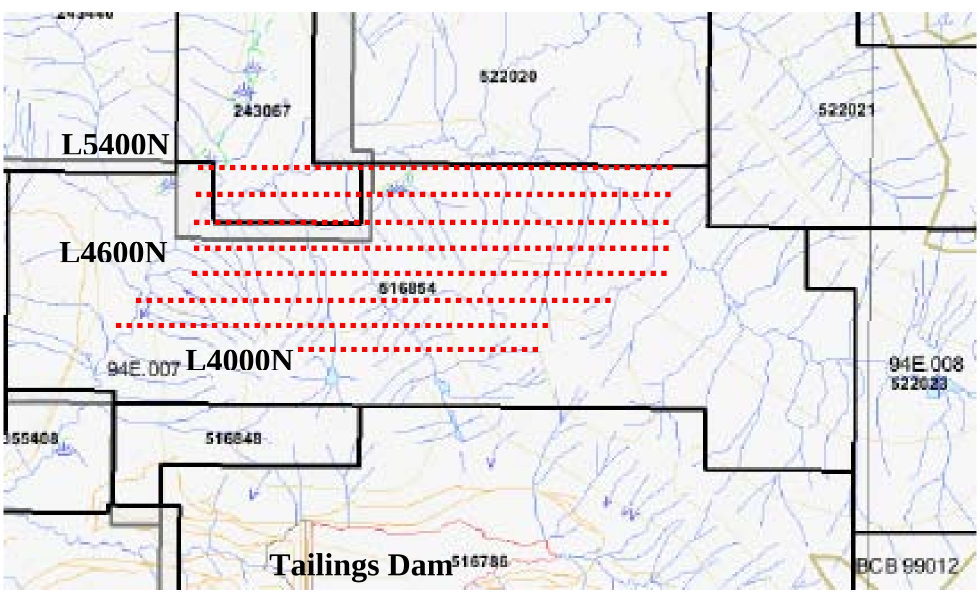


Figure 6 Locations of Cut Lines North of Tailings Adjacent to Claim Boundary

9.2 GEOPHYSICS

From August 2 to August 15, 2008, a ten-man crew from Discovery International Geophysics Ltd. conducted 22.6 kms of poledipole IP/Resistivity survey on 8 lines. Due to extreme topography 4.4 km of the cut lines could not be safely surveyed.

A pole-dipole electrode array was employed with survey parameters of a = 100m, and n = 0.5 to 6. Pseudosections and plan maps for chargeability and resistivity were generated using an inversion algorithm. (see Appendix 1). Figures 7 and 8 show a typical pseudosection and IP plan map. Results were combined into a single plan overlay of geophysical anomalies, defined by areas of resistivity lows and chargeability highs, shown in figure 9.

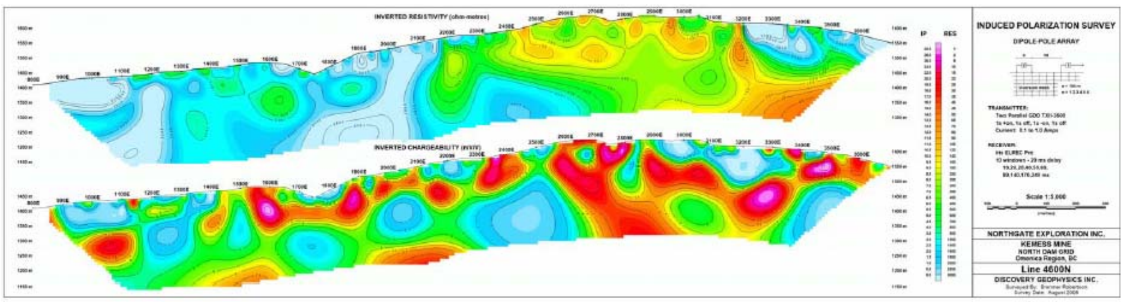


Figure 7 L4600N Inverted Resistivity and Inverted Chargeability Pseudosections

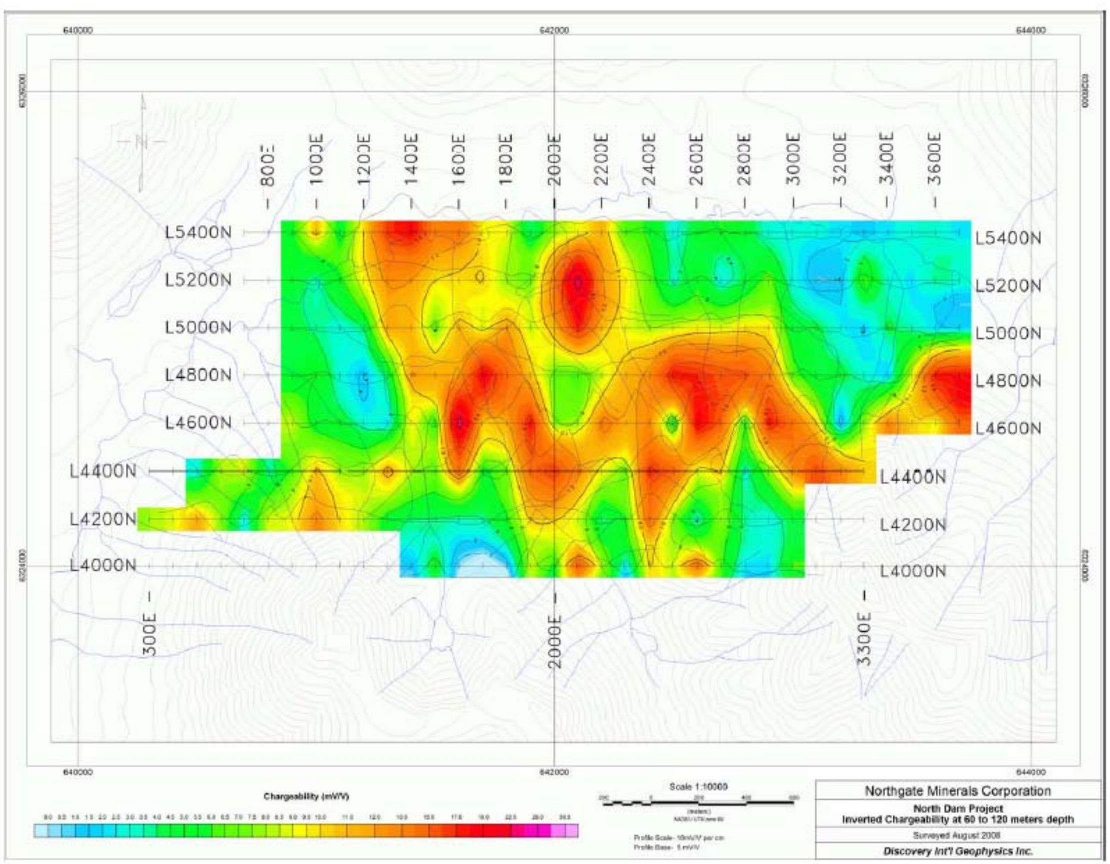


Figure 8 Inverted Chargeability Plan Map at 60 to 120 m Depth

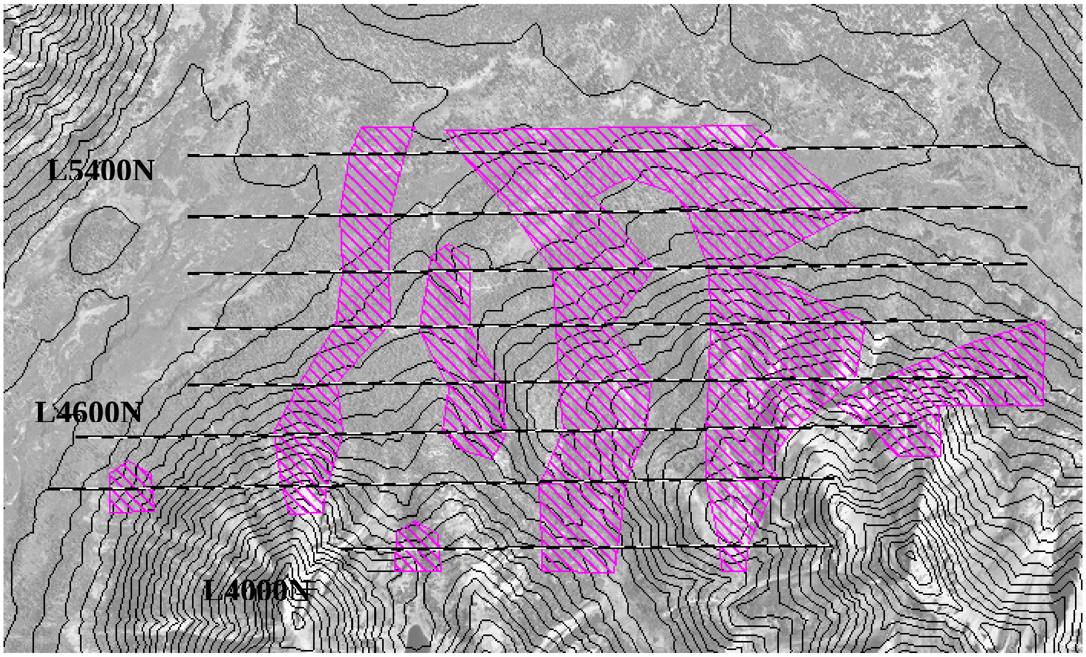


Figure 9 Plan Overlay of Compiled Geophysical Anomalies

9.3 GEOLOGIC MAPPING AND ROCK SAMPLING

Mapping and rock sampling was done concurrently with the line cutting and geophysical survey work. Approximately 23 km of traverses were mapped with a total of 231 mapping stations recorded.

Geological mapping confirmed earlier regional scale work by Diakow, with the following exceptions.

1. What was presumed to be till covered Takla volcanics northwest of the central body of Black Lake granodiorite is unit H3a. (figure 10)

   H3a Dacitic tuffs: Grey-green, medium-grained crowded texture with up to 40 % plagioclase, quartz to 5%, relict hornblende and biotite (up to 3% combined), relatively sparse but widespread accidental lithic fragments include augite phyric and mega-plagiophyric basalts of unit T3, and a pink, porphyritic quartz-feldspar granitoid; interpreted as probable non-welded crystal-rich ash-flow tuffs.[1]

2. The Toodogone formation over the eastern portion of the grid, published as H8, is dominated by H10 and H9, with subordinate amounts of T3a and T3c (figure 11). Incidentally, H9 is the unit that overlies the Kemess South Deposit.

   H10 - Volcaniclastic-epiclastic deposits: Lapilli tuff, dark maroon, crudely layered thick beds that when exposed rapidly disintegrate due to probable swelling clay in the matrix, tuffs are dominated by light green, clay-altered vitriclasts and abundant plagioclase fragments; epiclastic intervals consist of feldspathic sandstones and siltstones that commonly contain abundant detrital pyroxene grains, lesser conglomerates and minor mudstones; (194 ± 0.6 Ma by U-Pb(z)); scarce interlayered, dark green aphanitic basalt flows or sills(?).[1]

[1] Diakow 2001

H9 - Crystal and ash tuffs: Green, platy weathering, contains plagioclase and trace amounts of quartz and biotite; depositionally overlies unit H8 locally. [1]

(T3a) Lava flows and tuffs characterized by augite and plagioclase phenocrysts; subordinate tuffs forming laterally discontinuous deposits are composed of aphanitic and porphyritic basaltic lapilli and uncommon blocks [1]

3. In the northeast-central area of the grid (figure 10) a previously unmapped 100 by 400 m zone of quartz monzonite intrusion was outlined. West of this quartz monzonite, what was published as H8 has been identified as T3c.

(T3c) aphanitic basalts, lithologically indistinguishable from unit A1a. [1]

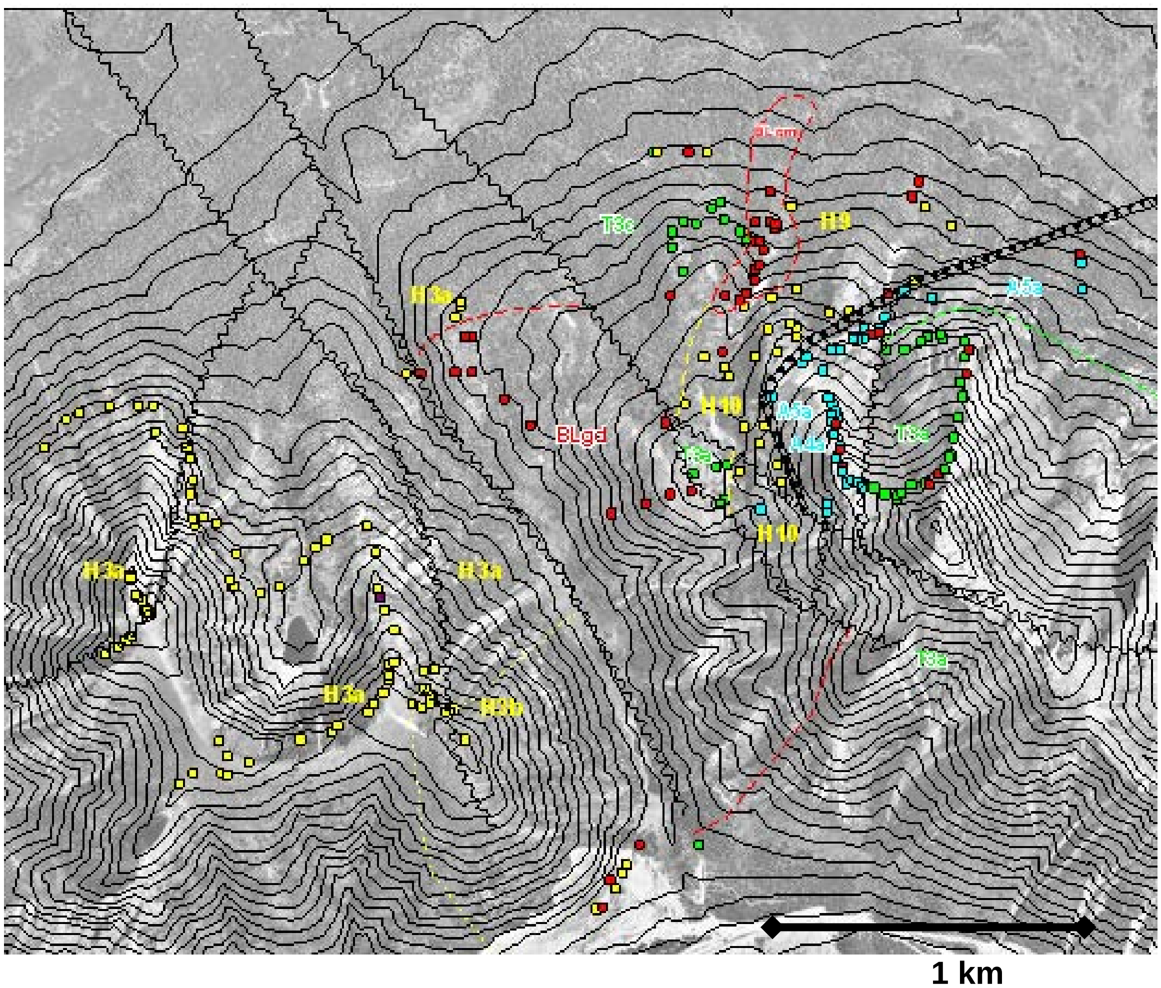


Figure 10 Geological Map of North Dam Grid Area

[1] Diakow 2001

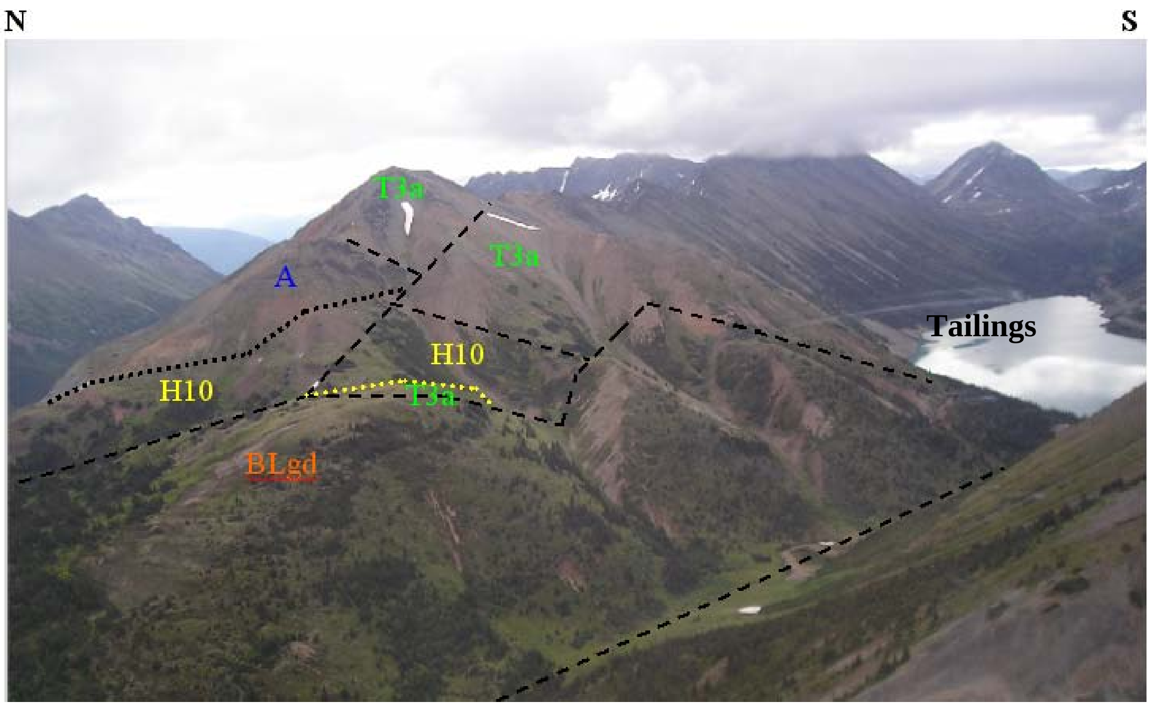


Figure 11 Geological Overlay looking East Over North Dam Grid Area

Table 4. Rock Samples

Easting	Northing	Sample Number	Lith1	Lith Group	Structure Type	Strike	Dip	Au	Cu
643158	6324597	0115151	GDR	B				0.29	0.024
643150	6324533	0115152	FEL	A				0.02	0.003
643135	6324501	0115153	INT	A				0.01	0.007
642930	6324423	0115154	CHT	A	BED	180	68	0.02	0.542
643002	6324294	0115155	CHT	A				0.01	0.056
643072	6324075	0115156	Q	A				0.01	0.012
643085	6324055	0115157	Q	A				0.02	0.015
643119	6324056	0115158	AAP	T				0.02	0.04
643149	6324037	0115159	AAP	T				0.02	0.016
643196	6324042	0115160	AAP	T				0.02	0.023
643272	6324063	0115161	GDR	B				0.02	0.026
643266	6324484	0115162	AAP	T				0.01	0.038
643137	6324488	0115163	QMZ	B				0.01	0.004
643064	6324473	0115164	CHT	A				0.03	1.283
641317	6323283	0115165	Q	H				1.07	0.008
642389	6323995	0138993	QMZ	B				0.02	0.001
642801	6324003	0138994	Po	A				0.08	0.159
642988	6324017	0138995	LST	A				0.02	0.003
642986	6323988	0138996	Q	A				0.02	0.01
643224	6324868	0138997	QMZD	B				0.02	0.016
643691	6324699	0138998	QMZ	B				0.02	0.003
643243	6324908	0138999	QMZ	B				0.03	0.001
643202	6324605	0139000	INT	A				0.02	0.025

Geologists Ron Konst and Carl Edmunds performed geologic mapping and rock sampling. A total of 23 rock samples were submitted to the on-site assay lab for copper and gold analysis under the supervision of Bill Smith, Chief Assayer at Kemess Mine. Results are presented above in Table 4.

Alteration, veining, and mineralization is uncommon in the North Dam Grid area. The small area of quartz monzonite in the northeast-central area of the grid is the only exposure of any significance. This consisted of a widespread gossanous area of intense phyllic alteration. Grab samples from this area returned only weakly anomalous values of gold and copper; less than 0.3 g/t and 0.025% respectively. Additionally, a narrow quartz vein hosted in Hazlton returned 1.1 g/t gold and one sample of malachite on fractures in Asitka Chert returned 1.28% copper.

10.0 CONCLUSIONS AND RECOMMENDATIONS

The North Dam Grid program did not uncover significant gold and/or copper mineralization at surface. However, combined geological mapping and geophysical survey results indicate an area of favorable geology with a coincident strong IP anomaly, as outlined in red in Figure 12. A follow-up drill plan is recommended for 2009 to test this mineralization at depth.

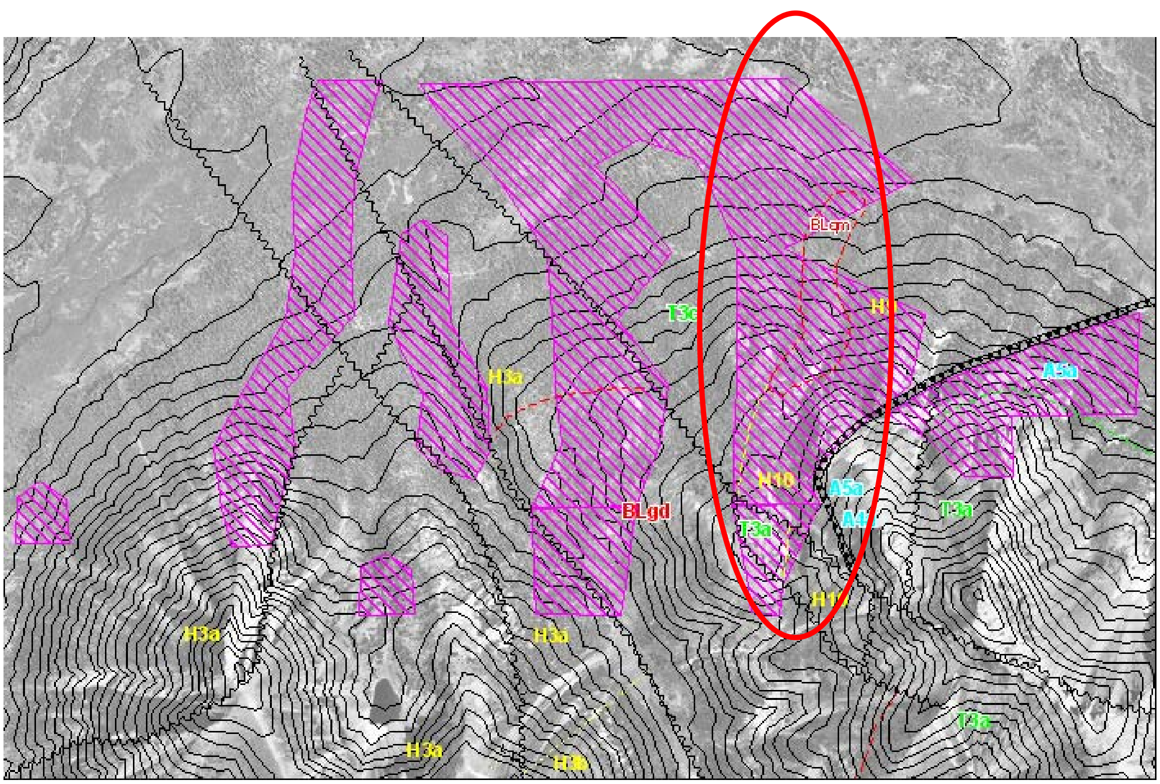


Figure 12 Geological and Geophysical Compilation of North Dam Grid Area

11.0 STATEMENT OF COSTS

Exploration costs for 2008 totaled **$214,263** as outlined in Table 5 below.

Table 5. 2008 Kemess North Dam Grid Summary of Expenditures

Period: July 21, 2008 to August 15, 2008

Sample Preparation & Assays	51	samples @	$31	$1,581
Camp Costs	189	man days @	$45	$8,505
Flights	5	flights	$500	$2,500
Fuel	17	Drums @	$425	$7,225
Geological Services R. Konst, F.C. Edmunds	26	man days @	$525	$13,650
Geophysics Discovery International Geophysics Ltd. August 2 – August 15, 2008	22.6	Line km @	$4,290	$96,949
Helicopter	42.3	hrs @	$910	$38,493
Line Cutting Johnny Line Cutting July 21 – August 1, 2008	27	Line km @	$1,680	$45,360
Total Expenditures				**$214,263**

12.0 STATEMENT OF QUALIFICATIONS

I, Frederick Carl Edmunds, of 1115 Queens Avenue, West Vancouver, British Columbia, Canada, do hereby certify that:

1. I have supervised the 2005 exploration program completed at Kemess, reviewed all the data contained herein, and contributed to the preparation of this report.

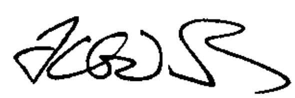
2. I graduated from the University of Edinburgh in 1983 with a B.Sc. (Honours) in Geology.

3. I graduated from Queens University, Kingston, Ontario in 1988 with an M.Sc. in Mineral Exploration.

4. I am a Professional Geoscientist (P.Geo.) registered with the Association of Professional Engineers and Geoscientists of British Columbia, member # 19724, and have been a member in good standing since 1992.

6. From 1985 until present I have been continuously employed as a Geologist in mineral exploration.

Dated at, Vancouver, British Columbia the 7th day of April 2009.



F.C Edmunds

STATEMENT OF QUALIFICATIONS

I, Ronnald A. Konst, of 1691 Broadlands Road, Errington, British Columbia, Canada, do hereby certify that:

1. I have supervised the 2008 exploration program completed at Kemess and contributed to the preparation of this report.

2. I have studied Geology at the University British Columbia in Vancouver, British Columbia and have received a Bachelor of Sciences degree in 1984.

3. I have continuously practiced my profession as an exploration geologist since graduation until 1998 in Canada, U.S.A., and Mexico. For the period of 1998 through 2002 I was employed as a Quality Assurance Specialist and Database Analyst in the Information Technologies sector. I resumed practice of my profession as an exploration geologist in 2003. Since then I have been continuously employed as a Geologist in mineral exploration.

Dated at Errington, British Columbia, the 2nd day of March 2009.

Ronnald A. Konst, B.Sc.

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14.0 LIST OF APPENDICES

Appendix 1: Logistical Report On An Induced Polarization And Resistivity Survey

LOGISTICAL REPORT ON AN INDUCED POLARIZATION AND RESISTIVITY SURVEY

NORTH DAM PROJECT
NORTHERN BRITISH COLUMBIA

LATITUDE: 57° 03’ N LONGITUDE: 126º 40’ W
UTM (NAD83): 640,000 E 6,325,000 N Zone 9
NTS: 094E02

by

Scott Medcalf, B.Sc., Geophysicist

for

Northgate Minerals Corporation
815 Hornby Street
Vancouver, BC V6Z 2E6

DATE OF WORK: August 2 to August 15, 2008

DATE OF REPORT: December 12, 2008

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INTRODUCTION

During the period of August 2 to August 15, 2008, Discovery Geophysics Inc. carried out a pole-dipole IP/Resistivity survey on the North Dam Grid, near the Kemess mine for Northgate Minerals Corporation. The Kemess Mine property is located approximately 450 km northwest of Prince George, BC.

A total of 22.6 km of IP/resistivity data were collected on 8 lines over the North Dam grid on the Kemess property. The survey team consisted of crew chief Bremner Robertson, along with crew members: Arnold Dunbar (Tx Operator), Ronny McLeod, Justin Brears, Oliver McKenzie, Thomas Caisse, Howard Caisse, Micheal Caisse, Lenard Cassie, Harvey Chan and Adam Starnyski.

The survey was carried out using an Iris ELREC-Pro time-domain IP receiver and two GDD TxII 3.6 kW transmitters, in parallel, to achieve a total output power of 7.2 kW. A pole-dipole electrode array was employed with survey parameters of a = 100m, and n = 0.5 to 6. Detailed technical information on the equipment used to conduct the North Dam IP/resistivity survey can be found in Appendix A: Instrument Specifications.

PROPERTY LOCATION, ACCESS, DESCRIPTION AND PHYSIOGRAPHY

The North Dam grid is located on NTS map sheet 94E/02 at 57° 03' N Latitude and 126º 40' W Longitude (UTM: 640,000 E 6,325,000 N, Zone 9, NAD83) in northern British Columbia, approximately 450 km northwest of Prince George, BC (Figure 1) and 5 km southeast of the Kemess Mine.

Accommodations were at the Kemess Mine site. The area is mountainous, with valley bottoms dominated by creeks and thick undergrowth. Mountainsides are dominated by pine trees at mid elevations. Mountain tops reach above tree level, where the terrain is quite steep with cliffs and loose scree (talus) slopes. A helicopter was used to access the grid, where crew members were shuttled in from a staging area that could be driven to from the mine.

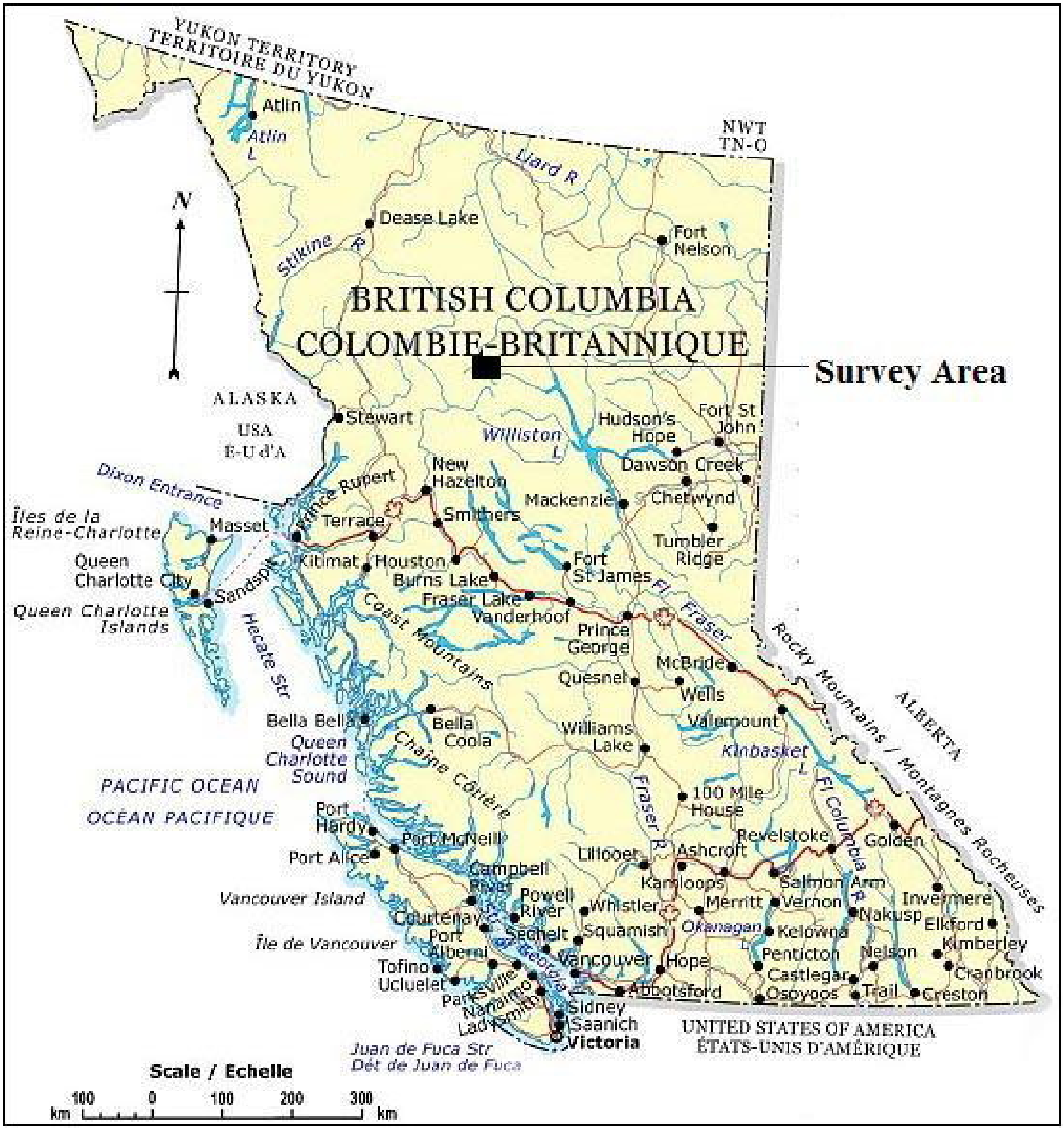


Figure 1: Property Location Map

SURVEY PROCEDURES

The IP/Resistivity survey was carried out using an Iris ELREC Pro time-domain IP receiver and two GDD TxII- 3.6 kW transmitters, in parallel, to achieve a total output power of 7.2 kW. A pole-dipole electrode array was employed with survey parameters of a = 100m, n = 0.5 to 6. For each receiver spread, one set of readings were taken with the current electrode located 100m from the receiver spread to measure the n= 1, 2, 3, 4, 5, 6 values. The current electrode was then advanced 50m for a second set of readings to measure the n= 0.5, 1.5, 2.5, 3.5, 4.5, 5.5. The Iris ELREC Pro receiver records both induced polarization and resistivity data simultaneously. The receiver operator recorded two readings at each station to ensure the integrity of the IP/resistivity data.

Stainless steel rods were used as potential and current electrodes. The receiver was placed in the middle of a spread of seven stainless steel electrodes, which were connected to the receiver through individual potential wires. The moving current electrodes and ‘infinite’ current electrodes were connected to the transmitter with 16-gauge wire, suspended above the ground wherever possible. Transmitter currents ranged from a low of 0.1 amps to a high of 1.1 amps, but mostly varied from 0.4 to 0.6 amps.

The receiver simultaneously records the primary, secondary and SP voltages from the potential dipoles. A value of apparent resistivity (in ohm-m) and apparent chargeability (in mV/V) is calculated using these voltages, the recorded current and the relative locations of all electrodes. The integrated chargeability is calculated by summing the secondary voltages in 20 time windows from an initial delay of 20 milliseconds (ms) out to 850 ms. The transmitter and receiver were operated on a 4-second period: i.e. 1s on (+'ve), 1s off, 1s on (-'ve), 1s off, etc. Specific information on the Iris ELREC-Pro receiver and the GDD TxII 3600 kW transmitter can be found in Appendix A: Instrument Specifications.

A total of 22.6 km of IP/resistivity survey coverage was completed during the 14-day survey period. Details of the IP/resistivity survey are found in Table 1, and the survey line locations are shown in Figure 2. Additional details can be found in the production notes in Appendix B.

Table 1 – North Dam Grid IP/Resistivity Survey Coverage

Line	Station		Station	Total (m)
4000N	1200E	to	3000E	1800
4200N	200E	to	3000E	2800
4400N	300E	to	3300E	3000
4600N	700E	to	3700E	3000
4800N	700E	to	3700E	3000
5000N	700E	to	3700E	3000
5200N	700E	to	3700E	3000
5400N	700E	to	3700E	3000

Total 22.6 km

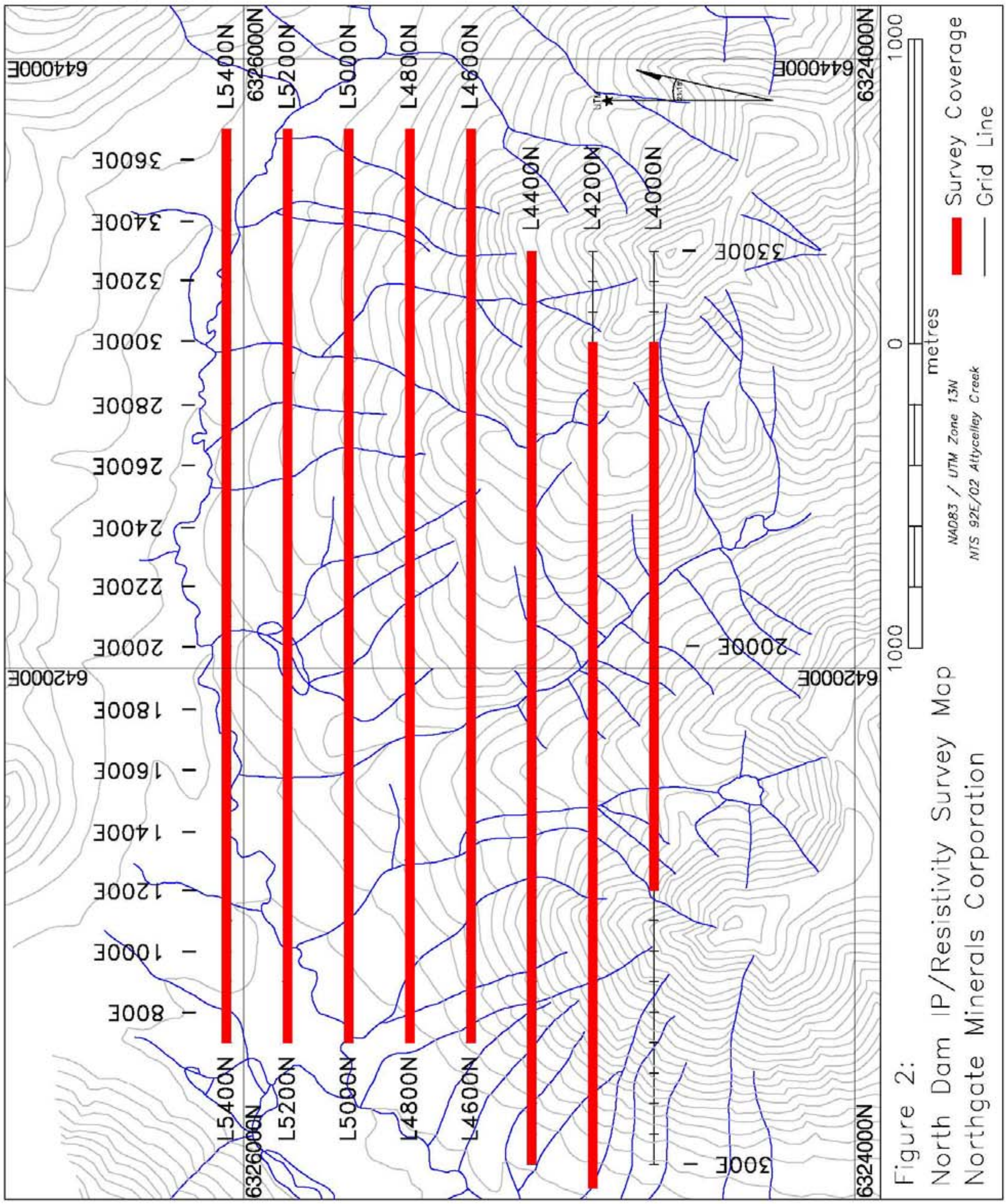


Figure 2- North Dam IP/Resistivity Survey Map

DATA PROCESSING AND PRESENTATION

The ELREC Pro automatically records the following information for each channel with each reading: line number, current electrode station, potential dipole station, self potential (Sp) in millivolts, primary voltage (Vp) in millivolts, chargeability (M) in millivolts per volt (mV/V), chargeability stacking error or deviation, the current keyed in by the operator in milliamps (mA), number of stacks, and 20 secondary voltages normalized by the primary voltage in millivolts per volt (mV/V). Successive primary, secondary and spontaneous potential readings are averaged during the stacking process. The receiver operator determines the number of stacks based on the quality of the data as exemplified by the consistency of individual readings and the indicated stacking error. Depending on the telluric noise and the amplitude of the receiver voltages (which depends on the apparent resistivity of the ground and the amount of current generated by the transmitter), typical stack counts are usually between 4 and 8.

The 20 normalized secondary voltages are the average values in 20 user-specified, time-delay gates: #1 – 40 to 60 ms, #2 - 60 to 80 ms, #3 - 80 to 100 ms, #4 - 100 to 120 ms, #5 - 120 to 140 ms, #6 - 140 to 160 ms, #7 - 160 to 180 ms, #8- 180 to 200 ms, #9 - 200 to 240 ms, #10 - 240 to 280 ms, #11 - 280 to 320 ms, #12 - 320 to 360 ms, #13 - 360 to 400 ms, #14 - 400 to 440 ms, #15 - 440 to 520 ms, #16 - 520 to 600 ms, #17 - 600 to 680 ms, #18- 680 to 760 ms, #19 - 760 to 840 ms, and #20 - 840 to 920 ms. The total integrated chargeability is the sum of each normalized secondary voltage multiplied by the length of its sample interval, divided by the total sample interval (i.e. 0.88 sec).

The data from each of the 6 dipoles are automatically stored with all associated header information with every reading. The positions of all electrodes for any given dipole at any reading location can be derived from this header information. The data are concatenated into a single data file as the survey progresses. New data files are started each day and for each individual line and are dumped to a portable computer at the end of every survey day.

The data processing procedure in the field is to simply reformat the instrument “.bin” files into Geosoft format ".dat" files, convert to pole readings by cumulative summing the contiguous dipole readings, calculate the apparent resistivity in ohm-m from the primary voltage, the current, and the electrode locations using standard formulation, and then plot these data as pseudo-sections. More robust processing can be carried out post-survey to reduce noise and improve the reliability of the data, by evaluating how well the 20-window secondary voltages fit a standard Cole-Cole model decay curve (Johnson, 1984). At times, two or more successive readings were taken at each station to ensure the integrity of the data.

Final processed data are written to plot data files together with their corresponding measurement location defined as the midpoint between the current and potential electrodes, and a pseudo-depth defined as half the distance between the current and potential electrodes. The pseudo-depth values are used to form standard Hallof pseudo-sections of the data (Hallof, 1957) at 1:5,000 scale, as shown in Appendix C. Scales will not be exact because of page formatting constraints. All pseudo-sections are plotted with the same colour scheme so that line-to-line comparisons can be easily made. The pseudo-sections display both apparent resistivity and apparent chargeability data.

Hallof pseudo-sections cannot be considered true geometric sections of the IP/resistivity response of the earth along the survey line since the data are derived by measurement in a "half-space" rather than in a two-dimensional section (i.e. the data can be affected by anomalous zones to the side as well as at depth). In addition, Hallof pseudo-section data displays are complicated by the geometry of the electrode array. For instance, when either the current or potential dipoles are in proximity to an anomalous conductive or chargeable zone near surface, anomalous readings will result. When plotted in a Hallof pseudo-section, the anomalous readings appear to extend to depth on 45° slopes, forming the characteristic "pant-leg" type anomaly.

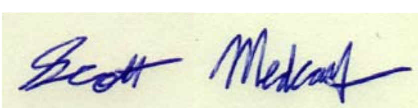
Pseudo-section geometric distortions can be overcome, and a truer section of the earth can be formed, by inverting the IP/resistivity data using formulation developed by Oldenburg and Li (1994). This formulation divides the two-dimensional earth into a rectilinear mesh of infinite horizontal prisms, each having an assigned resistivity and chargeability. The mesh is fine enough to adequately represent the topography and geologic section beneath the survey line, but can be no better than the resolution set by the dipole size and station interval. The mesh also extends beyond the survey line and to greater than the penetration depth in order to completely model the anomalous response.

In the inversion routine, the resistivities and chargeabilities of the individual mesh prisms are varied in a systematic way to find a better fit between the theoretically calculated response from the model and the actual measured response: i.e. the measured primary and secondary voltages. The mesh values can assume any value during this fitting procedure, except that the algorithm forces a smoothly varying distribution in preference to an irregular model, even though an irregular model may produce a more exact fit to the measured voltages. The procedure is iterative: it terminates (i.e. finds the best fitting model) once the misfit is below some predefined level.

The result is a geometrically and topographically "true" cross section that better represents the distribution of resistivities and chargeabilities beneath the survey line. But it may not be the actual distribution. Its accuracy is dependent of the density of measured data (the more data, the higher the resolution), and three-dimensional effects can produce spurious results. The results of the inversion are shown in Appendix D as individual resistivity and chargeability inversion sections for each line at 1:5,000 scale.

In order to view the IP/resistivity survey results in map form, the inversion results are also plotted as plan maps in four different depth ranges on maps of the entire North Dam grid area. Mesh values from the upper 40 m of the 2-D inversion sections are averaged into single values as a function of line and station location. Likewise, average values are determined for the 60 m to 120 m, 140 m to 200 m and greater than 240 m depth ranges. The averaged values in the four different depth ranges are then plotted as combined line profile and colour grid and contour plots (see Inversion Maps in Appendix E). Eight separate plots are generated: four chargeability plots and four resistivity plots in the four different depth ranges. These maps spatially depict the variation of resistivity and chargeability over the entire survey area. They are useful adjuncts to the inversion section plots for three-dimensional visualization.

Respectfully submitted,



Scott Medcalf, B.Sc.
Geophysicist

REFERENCES:

Hallof, P.G.: On the Interpretation of Resistivity and Induced Polarization Results, unpublished. Ph.D. thesis, Mass. Inst. Tech., 1957.

Johnson, I.M.: Spectral induced-polarization parameters as determined through time-domain measurements, Geophysics, vol.49, no.11, pp.1993-2003, 1984.

Oldenburg, D.W. and Li, Y.: Inversion of induced polarization data, Geophysics, vol.59, no.9, pp.1327-1341, 1994.

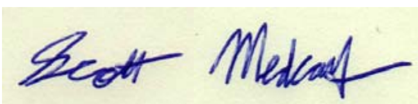
CERTIFICATE OF QUALIFICATIONS:

Scott Medcalf

I, Scott Medcalf, of Vancouver, in the province of British Columbia, hereby certify as follows:

1. I hold the following university degree: Bachelor of Science, Geophysics, UBC, 2007.
2. I have practiced my profession as a field geophysicist and report geoscientist 2007-2008.
3. I have no direct interest in Northgate Minerals Corporation or the above described properties or projects, which are the subject of this report, nor do I intend to have any direct interest.

Dated at Vancouver, in the Province of British Columbia, 12 December 2008.



Scott Medcalf, B.Sc.

Geophysicist

APPENDIX A

Instrument Specifications

ELREC PRO RECEIVER
Specifications

a. 10 CHANNELS / IP RECEIVER FOR MINERAL EXPLORATION
b. 10 simultaneous dipoles
c. 20 programmable chargeability windows
d. High accuracy and sensitivity

ELREC Pro: this new receiver is a new compact and low consumption unit designed for high productivity Resistivity and Induced Polarization measurements. It features some high capabilities allowing it to work in any field conditions.

Reception dipoles: the ten dipoles of the ELREC Pro offer a high productivity in the field for dipole-dipole, gradient or extended poly-pole arrays.

Programmable windows: beside classical arithmetic and logarithmic modes, ELREC Pro also offers a Cole-Cole mode and a twenty fully programmable windows for a higher flexibility in the definition of the IP decay curve.

IP display: chargeability values and IP decay curves can be displayed in real time thanks to the large graphic LCD screen. Before data acquisition, the ELREC Pro can be used as a one channel graphic display, for monitoring the noise level and checking the primary voltage waveform, through a continuous display process.

Internal memory: the memory can store up to 21 000 readings, each reading including the full set of parameters characterizing the measurements. The data are stored in flash memories not requiring any lithium battery for safeguard.

Switching capability: thanks to extension Switch Pro box(es) connected to the ELREC Pro unit, the 10 reception electrodes can be automatically switched to increase the productivity in-the-field.

FIELD LAY-OUT OF AN ELREC PRO UNIT

The ELREC Pro unit has to be used with an external transmitter, such as a VIP transmitter.
The automatic synchronization (and re-synchronization at each new pulse) with the transmission signal, through a waveform recognition process, gives a high reliability of the measurement.

Before starting the measurement, a grounding resistance measuring process is automatically run ; this allows to check that all the electrodes are properly connected to the receiver.

Extension Switch Pro box(es), with specific cables, can be connected to the ELREC Pro unit for an automatic switching of the reception electrodes according to preset sequence of measurements ; these sequences have to be created and uploaded to the unit from the ELECTRE II software. The use of such boxes allows to save time in case of the user needs to measure more than 10 levels of investigation or in case of large 2D or 3D acquisition.

DATA MANAGING

PROSYS software allows to download data from the unit. From this software, one has the opportunity to visualize graphically the apparent resistivity and the chargeability sections together with the IP decay curve of each data point. Then, one can process the data (filter, insert topography, merge data files…) before exporting them to a txt file or to interpretation software:
RES2DINV or RESIX software for pseudo-section inversion to true resistivity (and IP) 2D section.
RES3DINV software, for inversion to true resistivity (and IP) 3D data.

FEATURES

TECHNICAL SPECIFICATIONS

- Input voltage:
  - Max. for channel 1: 15 V
  - Max. for the sum from channel 2 to channel 10: 15 V
  - Protection: up to 800V
- Voltage measurement:
  - Accuracy: 0.2 % typical
  - Resolution: 1 µV
- Chargeability measurement:
  - Accuracy: 0.6 % typical
- Induced Polarization (chargeability) measured over to 20 automatic or user defined windows
- Input impedance: 100 MW
- Signal waveform: Time domain (ON+,OFF,ON-, OFF) with a pulse duration of 500 ms - 1 s - 2 s - 4 s -8 s
- Automatic synchronization and re-synchronization process on primary voltage signals
- Computation of apparent resistivity, average chargeability and standard deviation
- Noise reduction: automatic stacking number in relation with a given standard deviation value
- SP compensation through automatic linear drift correction
- 50 to 60Hz power line rejection
- Battery test

GENERAL SPECIFICATIONS.

- Data flash memory: more than 21 000 readings
- Serial link RS-232 for data download
- Power supply: internal rechargeable 12V, 7.2 Ah battery ; optional external 12V standard car battery can be also used
- Weather proof
- Shock resistant fiber-glass case
- Operating temperature: -20 °C to +70 °C
- Dimensions: 31 x 21 x 21 cm Weight: 6 kg

GDD TxII-3600 kW Induced Polarization Transmitter

The 3600 watts induced polarization (I.P.) transmitter works from a standard 220 V source and is well adapted to rocky environments where a high output voltage of up to 2400 V is needed. Moreover, in highly conductive overburden, at 150 V, the highly efficient TxII-3600 watts transmitter is able to send a current of up to 10 amperes. By using this I.P. transmitter, you obtain fast and high-quality I.P. readings even in the most difficult conditions. Its high power, up to 10 amperes, combined with a Honda generator makes it particularly suitable for pole-dipole Induced Polarization surveys.

Features:

- **Protection against short circuits even at zero (0) ohms**
- **Output voltage range: 150 V to 2400 V / 14 steps**
- **Power source: 220 V, 50/60 Hz**
- **Operates from a standard 220 V generator**

Specifications:

General	
Size TxII-3600	21 x 34 x 50 cm
Weight TxII-3600	approx. 35 kg
Operating temperature	-40°C to 65°C

Electrical	
Used for time-domain IP	2 sec. ON 2 sec. OFF
Time Base	1-2-4-8 sec.
Output current range	0.005 to 10 A
Output voltage range	150 to 2400 V
Power Source TxII-3600	Recommended motor/generator set: Standard 220 V, 50/60 Hz Honda generator Suggested Models: EM3500XK1C, 3500 W, 62 kg or EM5000XK1C, 5000 W, 77 kg

Controls	
Power	ON/OFF
Output voltage range switch	150 V, 180 V, 350 V, 420 V, 500 V, 600 V, 700 V, 840 V, 1000 V, 1200 V, 1400 V, 1680 V, 2000 V, 2400 V

Displays	
Output current LCD	reads to ±0,001 A
Very cold weather	standard LCD heater on readout
Protection	Total protection against short circuits even at zero (0) ohms
Indicator lamps **(in case of overload)**	- High voltage ON-OFF - Output overcurrent - Generator over or undervoltage - Overheating - Logic failure - Open loop protection

APPENDIX B

Survey Production Notes

Discovery Int'l Geophysics Inc.
Production Notes
Northgate Minerals Corporation
Kemess Mine – North Dam Grid
August 2 to 15, 2008

Crew List - Bremner Robertson (Crew Chief and Rx Operator), Arnold Dunbar (Tx Operator), Ronny McLeod, Justin Brears, Oliver McKenzie, Thomas Caisse, Howard Caisse, Micheal Caisse, Lenard Cassie, Harvey Chan, Adam Starnyski

Sat, Aug 2, 2008 – four crew members traveled from Pinehouse, spent the night in Gruenthal, two men in from La Ronge spent the night in Saskatoon. Trucks were loaded and fueled and ready for an early morning departure.

Sun, Aug 3, 2008 – the crew of 10 men departed Hague at 7am, traveled to Prince George arriving at 8pm, checked into a motel, ate supper and crashed for the night. **Daily rate**

Mon, Aug 4, 2008 – departed Prince George at 6:30am, ate breakfast along the way. The drive to Kemess was slower than expected, arriving at the gate at 3.30 pm. All crew members checked in with security and then met with Ron who assisted with getting rooms. All crew members then over to the admin building for orientation, which took 3 hours and was completed at about 7:30pm. **Daily rate**

Tue, Aug 5, 2008 – the crew of ten drove up to the staging area at 7am, prepped equipment for slinging and mob into the grid. All crew members then over to the heli pad for safety orientation with the pilot from Canadian Helicopters. Three men were flown into the grid, followed by two sling loads and then the remainder of the crew flown onto the grid. Three men sent out to lay current infinite and the remainder either setting up Tx or laying current feed to L4000N. The potential array was brought onto the line as well and between laying the current feed and setting up the array this took over 3 hrs to complete, very tough going especially the last 300m of the line. H Chan fell today and it was necessary to fly him to the mine to be checked out by the nurse, he did not return to the field. Attempted to commence the survey, however contact conditions were excessively high with the talus and improved contacts would be necessary for quality chargeability data. The crew returned to the mine, arriving at 6pm. In the evening a decision was made to abandon the survey on L40N for the time being and move to L54N. **Daily rate**

Wed, Aug 6, 2008 – the crew of 10 men flew onto the grid, first trip at 7am, wire setup on L40N was wrapped up, with difficulty and then laid out to 5400N and then setup. The survey on 54N started and was completed by about 3:30pm. Current feed and the potential array was wrapped up and setup on L5200N. The first trip back to the mine was at 5:15, last man arrived back to the mine at 5:35pm. **Daily rate plus production**

Thu, Aug 7, 2008 – the crew was ready to fly out at 6:45am but the pilot detected water in the fuel and then the helicopter batteries died and the crew was down until 2:15pm. At this time the entire crew was flown to the grid and L5200N was surveyed and completed, partial wrap up back along the line, all crew members flown back to the mine, last trip arriving at 7:30pm. Adam Starnyski

arrived from Saskatoon and carried out orientation, Harvey Chan flew out to Vancouver due to ankle problem. **Daily rate plus production**
Fri Aug 8 – the crew of 10 men left the mine site at 6:30 am, first trip in at 6:45am, completed wrapping up on 52N and then setup on L5000N. Line 50N was surveyed entirely followed by wrapping up and setting up on L4800N and then surveying to the baseline area, last trip back to the mine at 5:30 pm. **Daily rate plus production**

Sat, Aug 9, 2008 – the crew of 10 men all flown and onto the grid by 7am. The remainder of L48N was surveyed, followed by wrapping up on 48N and setting up on L4600N. The survey on 46N started, however there was intense noise and distant thunder was heard. At about 3pm there was a sudden lighting strike in the area and one of the GDD transmitters was damaged. Given this event and the growing intensity of the storm a decision was made to stop the survey for the day. The helicopter was called in and all crew members were back to the mine by 4pm. In addition there was an infinite wire break in the morning caused by elk in the area that resulted in a 45 min delay to repair. **Daily rate plus production**

Sun, Aug 10, 2008 – the crew was at the staging area at 6:40am, first trip to the grid at 6:50 am. The crew was in position and continued the survey on L4600N. Near the completion of the line a current leak developed that resulted in 1.5 hrs of down time to locate and repair. Once L46N was completed all feed wire was wrapped up along with the snake and moved over and setup on L4400N. The survey commenced however there was intense noise for the first section of the line in the area of low Vp values. The survey continued until 4:45pm at which point all crew members returned to the mine, last man arriving at 5:30pm. **Daily rate plus production**

Mon, Aug11, 2008 – the crew left the mine site at 6:30 am, drove to the helipad, 3 trips into the grid. All crew members were in position by 7am and continued on with the survey on L4400N. The line was completed at 11am and then wrapped up and setup on Line 4200N by 1pm. The crew surveyed on 4200N until 3.45 am and then halted the survey for the day. All men made their way to the heli pad, last trip arrived back to the mine at 4:45pm. **Daily rate plus production**

Tue, Aug 12, 2008 – the crew were up and out by 6:40 am, landed above 4200N and worked their way into position to continue with the survey. Were unable to continue on due to a cliff, had to wrap up the snake and call for a pickup and get flown around and come up from the west end of the line, lay out the snake and hike it up to the east as high as we could and then working our way down surveying. The snake was moved 100 meters off the end for one extra reading, completed line 42N and setup the array on line 4000N, worked until 4:30pm, last trip back to the mine at 5:15pm. **Daily rate plus production**

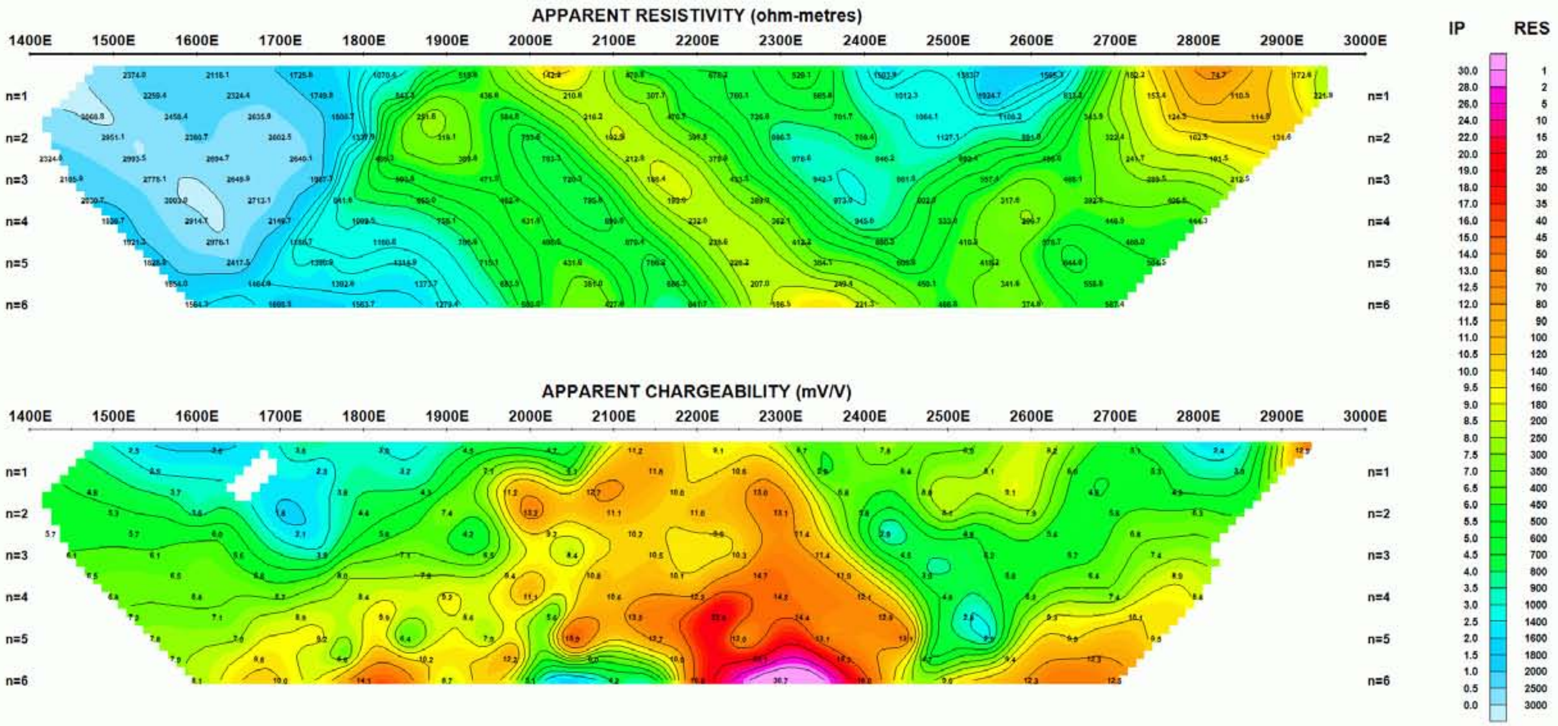
Wed, Aug 13, 2008 – The crew was out the door by 6.30 am and headed out to the heli pad and then up to the staging area for 6.45 am. All crewmembers were on the grid and set up and surveying by 7.30 am on L4000N, completed the line by 12.00 pm. Commenced wrapping up current feed down 40N, the current infinite, the potential array and began demobing the Tx site. All wrap-up completed and all crew members were at the mine by 3 pm. Met with Ron and confirmed all was in order and received the go-ahead to leave. Drove to Prince George and spent the night, 3 flat tires along the way, slow trip. **Daily rate plus production**

Thu, Aug 14, 2008 – The crew was up early and two drivers drove to Kal-Tire to have 2 tires replaced. There was a delay in doing this and the crew didn't leave Prince George until 11am. Both trucks and all crew members drove straight through to Saskatoon arriving at 2:30am on Fri morning. Eight crew members checked into a hotel for the remainder of the night. **Daily rate**

Fri, Aug 15, 2008 – the crew had a late breakfast and then traveled to the office to unload trucks and make arrangements for 4 men to travel to Pinehouse and 3 men to La Ronge. The 4 men traveling to Pinehouse arrived at 6pm and the 3 men to La Ronge arrived home at 5pm. **Daily rate**

APPENDIX C

IP/Resistivity Pseudo-Sections



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a na
V I
plot point
a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

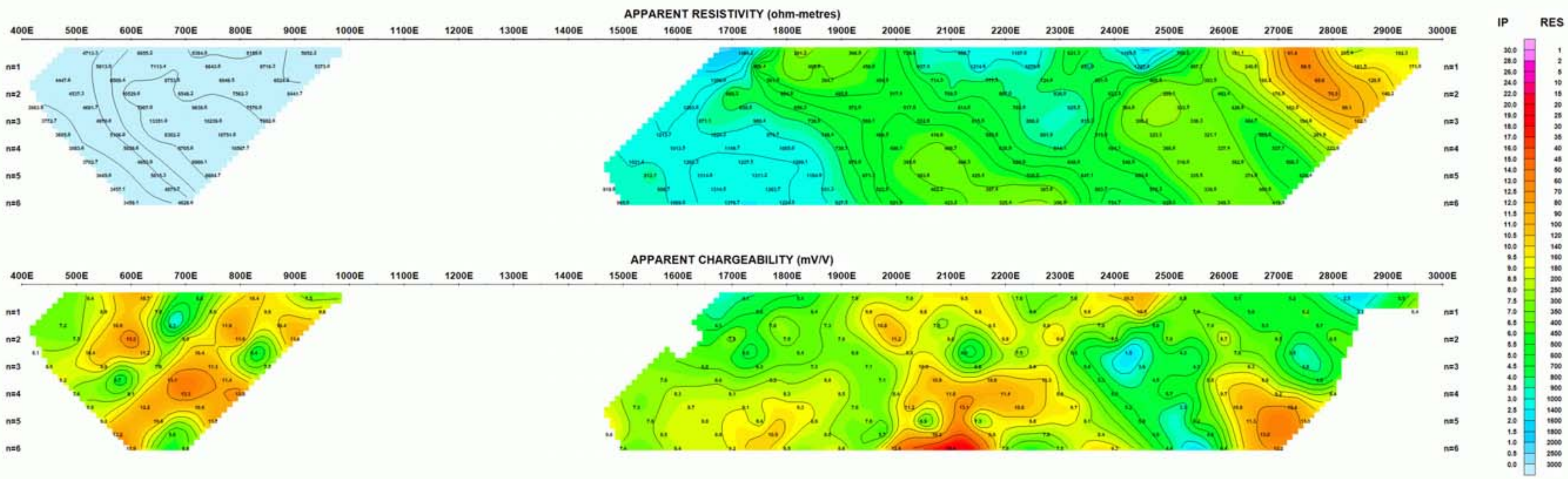
Scale 1:5,000
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

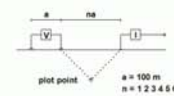
Line 4000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

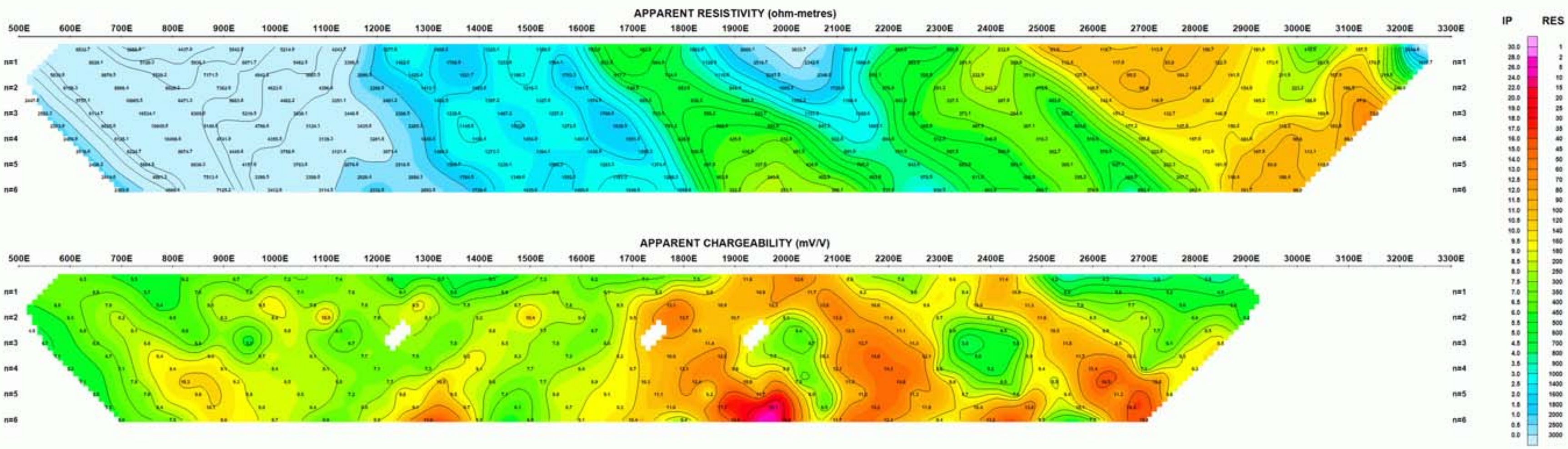
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

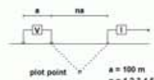
Line 4200N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

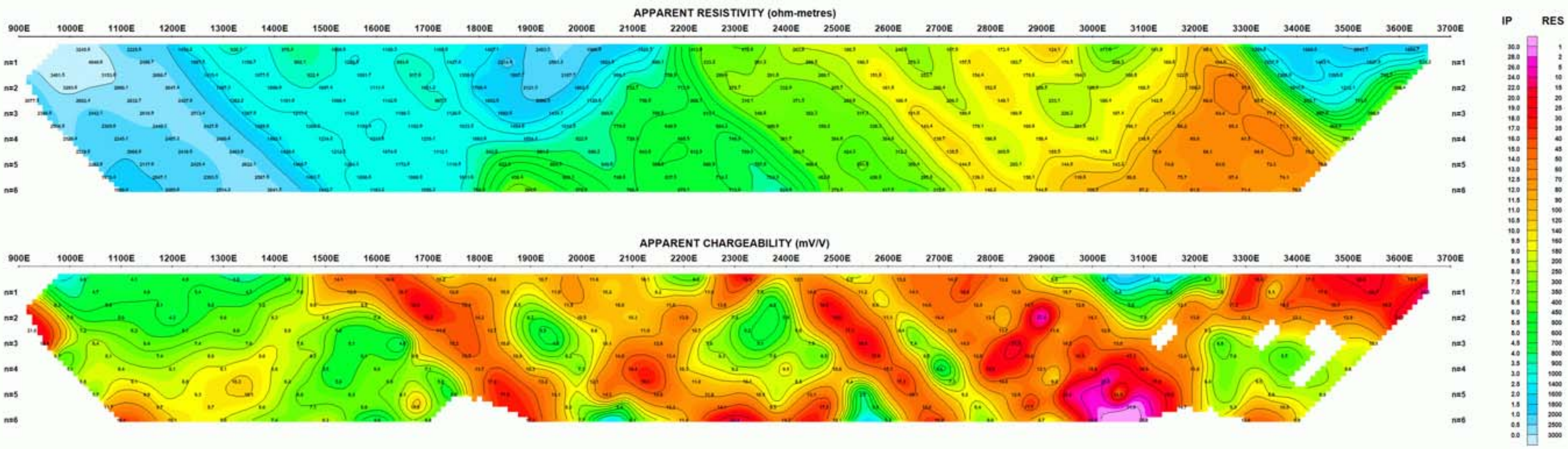
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

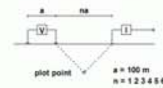
Line 4400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



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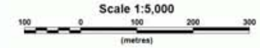
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

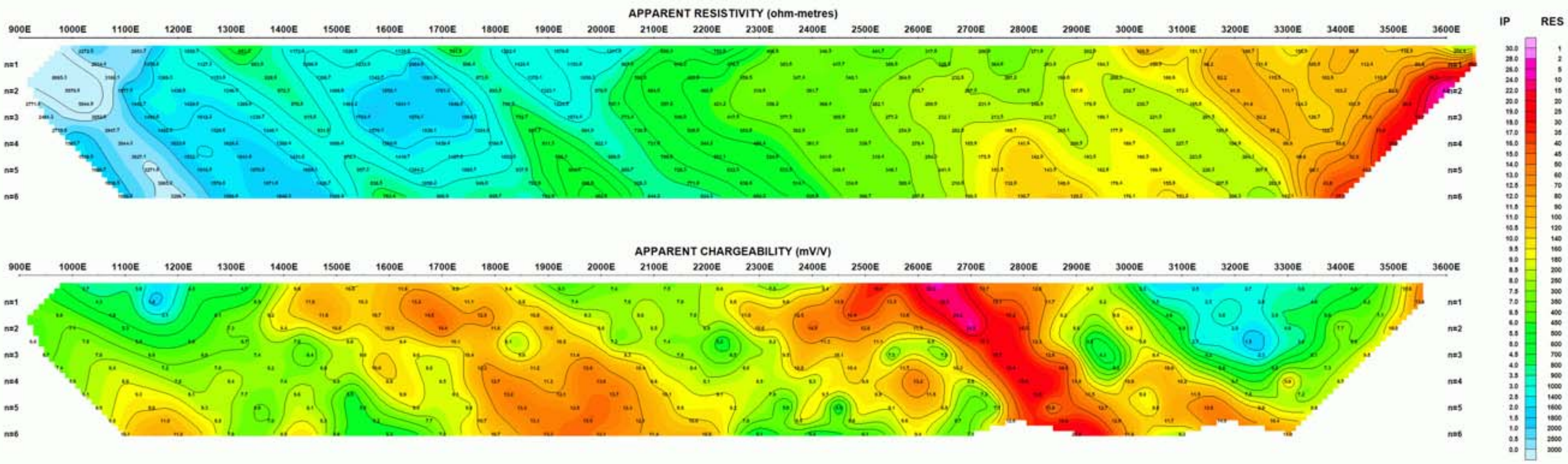


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

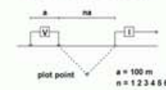
Line 4600N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
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Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

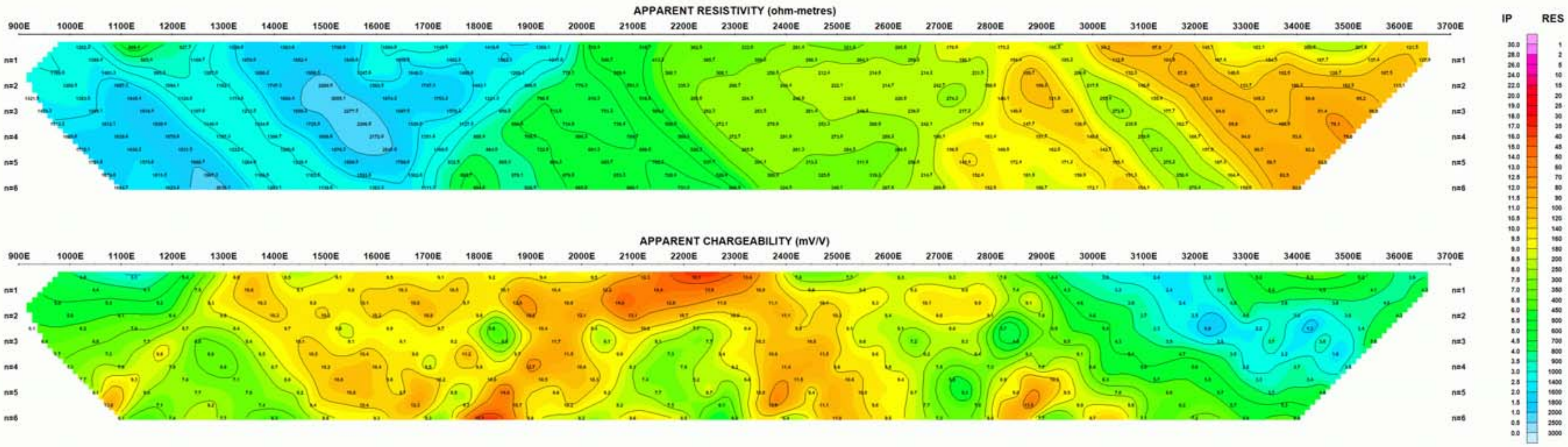
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

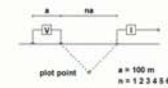
Line 4800N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000
100 0 100 200 300
(metres)

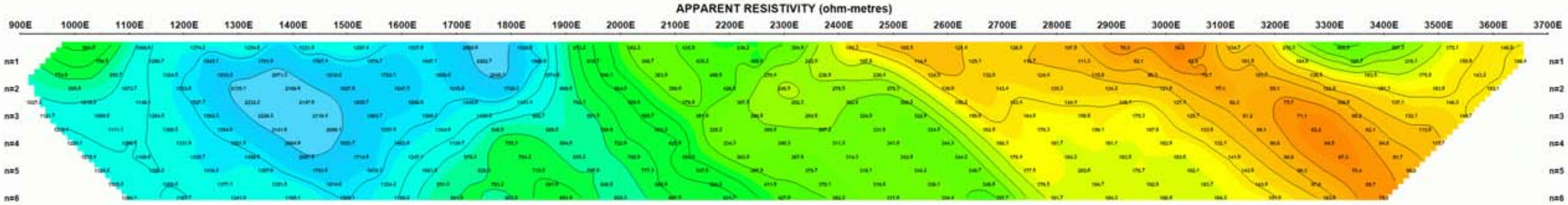
NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

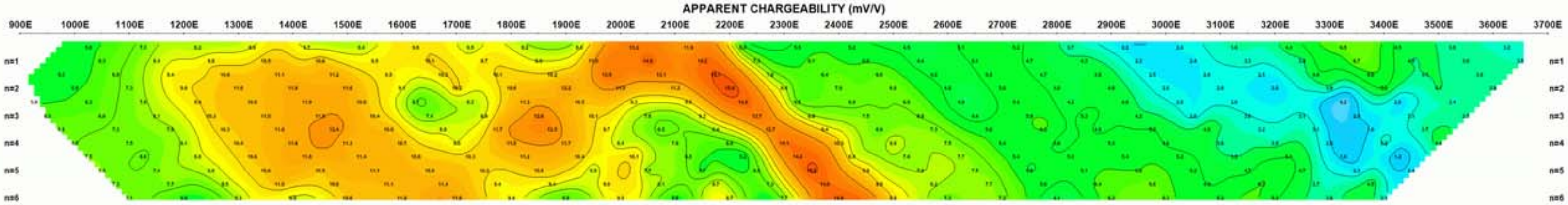
Line 5000N

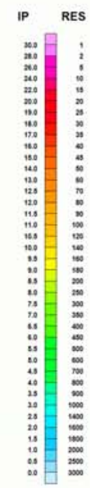
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

APPARENT RESISTIVITY (ohm-metres)



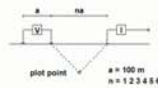
APPARENT CHARGEABILITY (mV/V)





INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

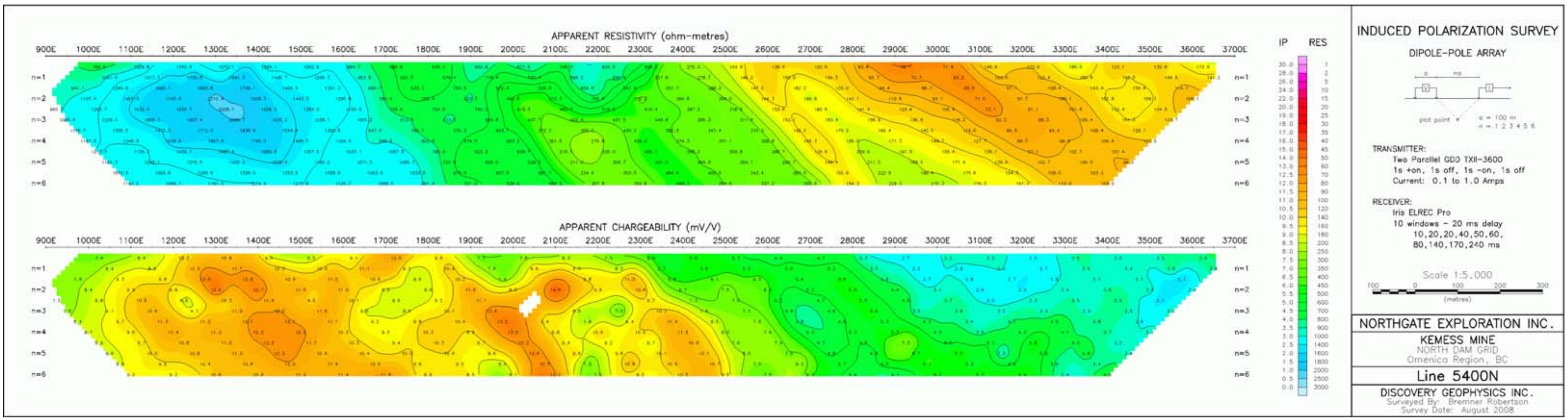
Scale 1:5,000
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 5200N

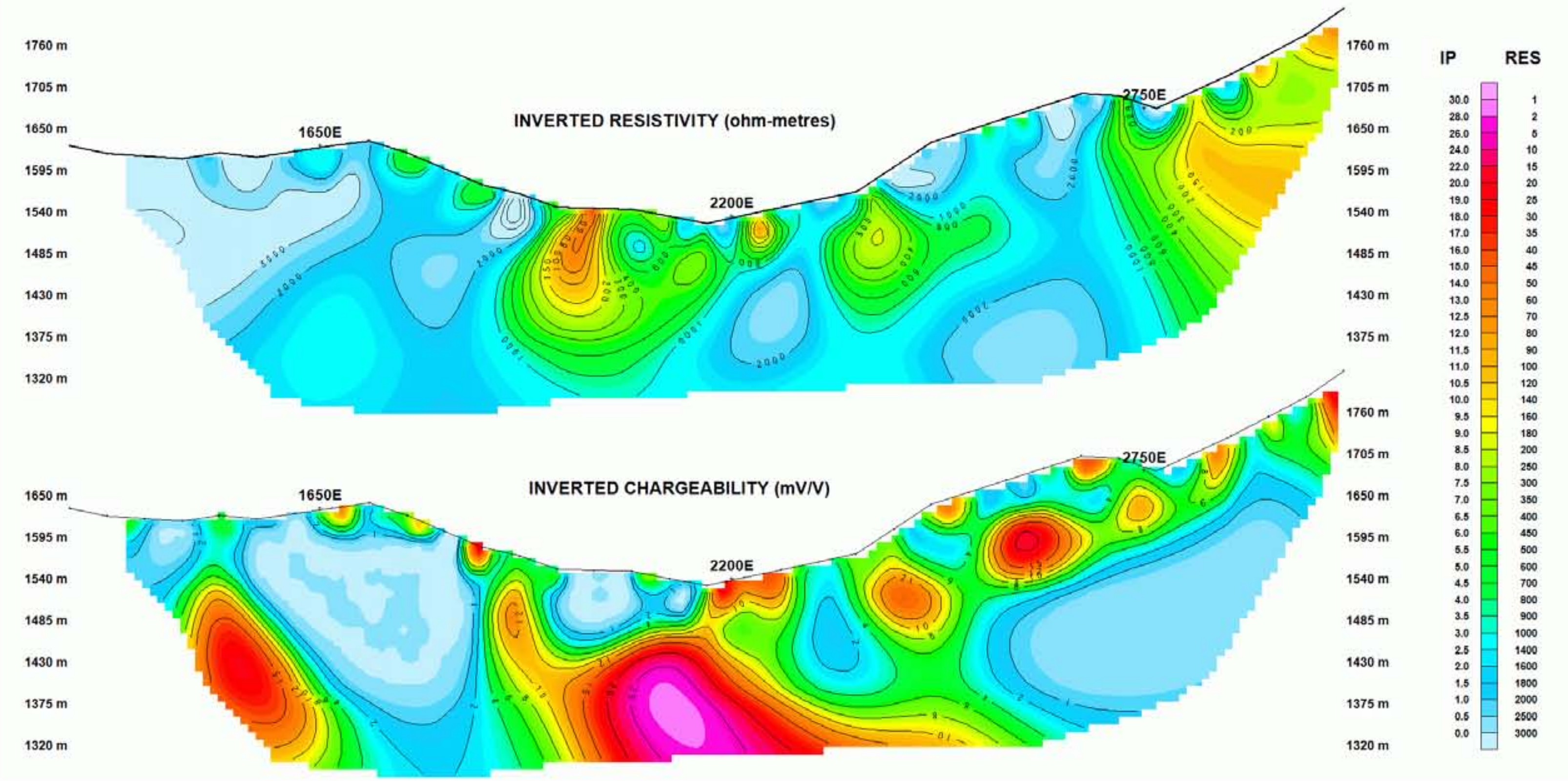
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



APPARENT RESISTIVITY (ohm-metres)
900E 1000E 1100E 1200E 1300E 1400E 1500E 1600E 1700E 1800E 1900E 2000E 2100E 2200E 2300E 2400E 2500E 2600E 2700E 2800E 2900E 3000E 3100E 3200E 3300E 3400E 3500E 3600E 3700E
n=1
n=2
n=3
n=4
n=5
n=6
APPARENT CHARGEABILITY (mV/V)
IP
RES
INDUCED POLARIZATION SURVEY
DIPOLE-POLE ARRAY
plot point
a = 100 m
n = 1 2 3 4 5 6
TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps
RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms
Scale 1:5,000
(metres)
NORTHGATE EXPLORATION INC.
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC
Line 5400N
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

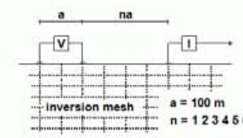
APPENDIX D

North Dam IP/Resistivity Inversion Sections



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

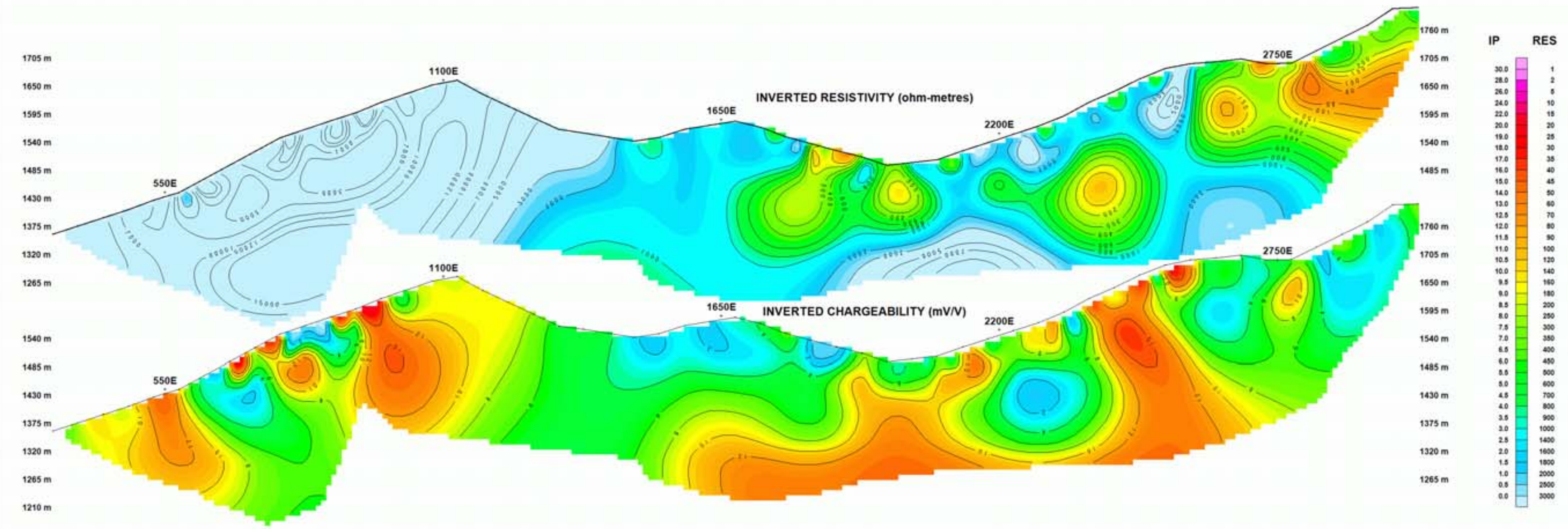
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

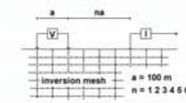
Line 4000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

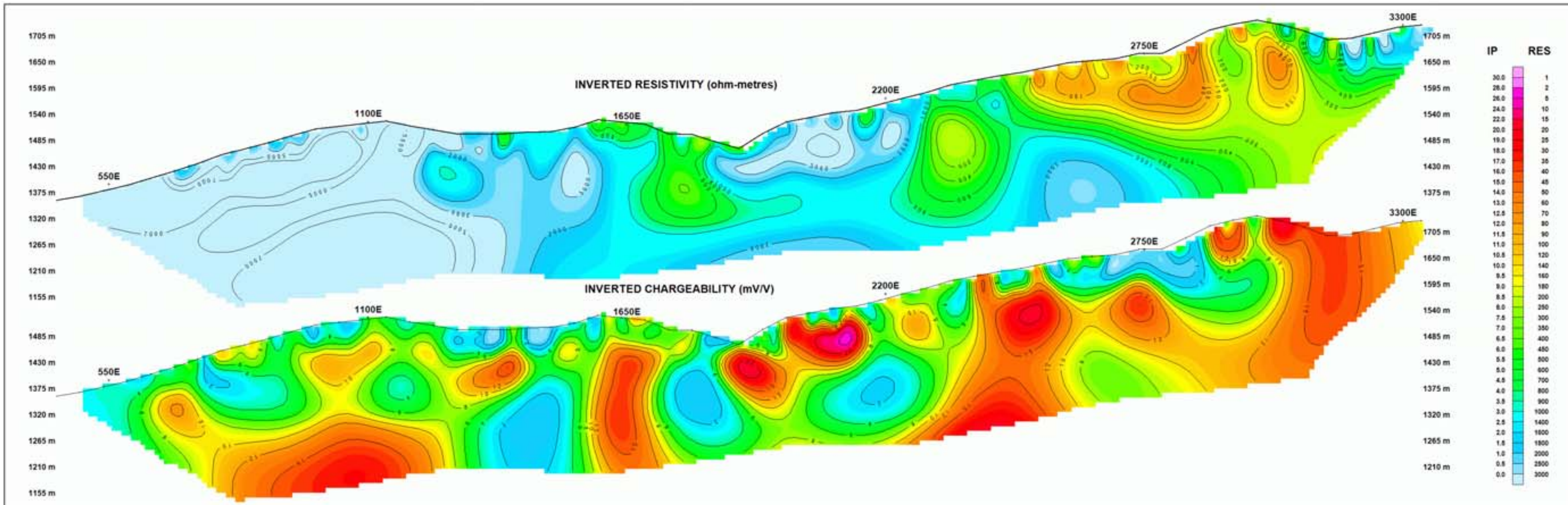
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

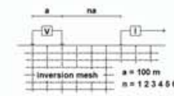
Line 4200N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

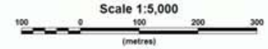
DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

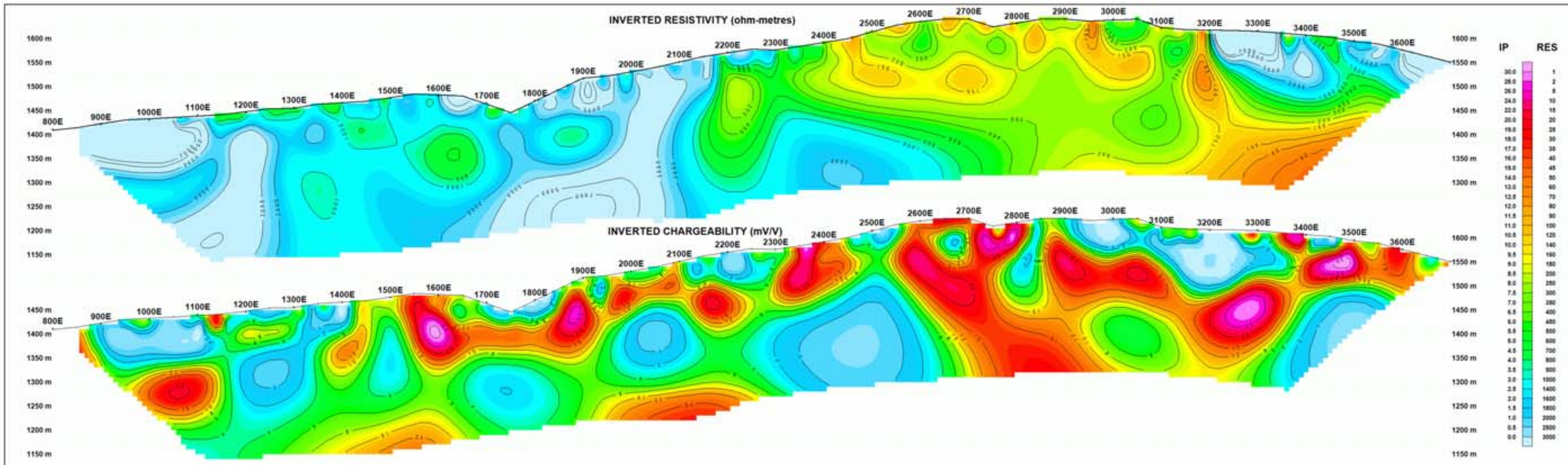


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

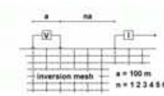
Line 4400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

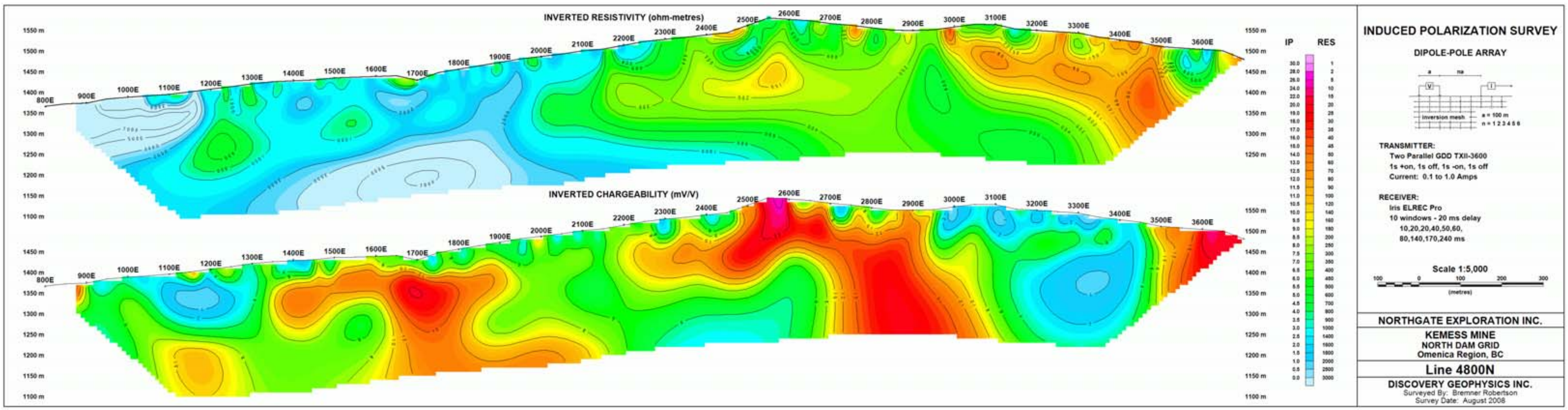
100 0 100 200 300
(metres)

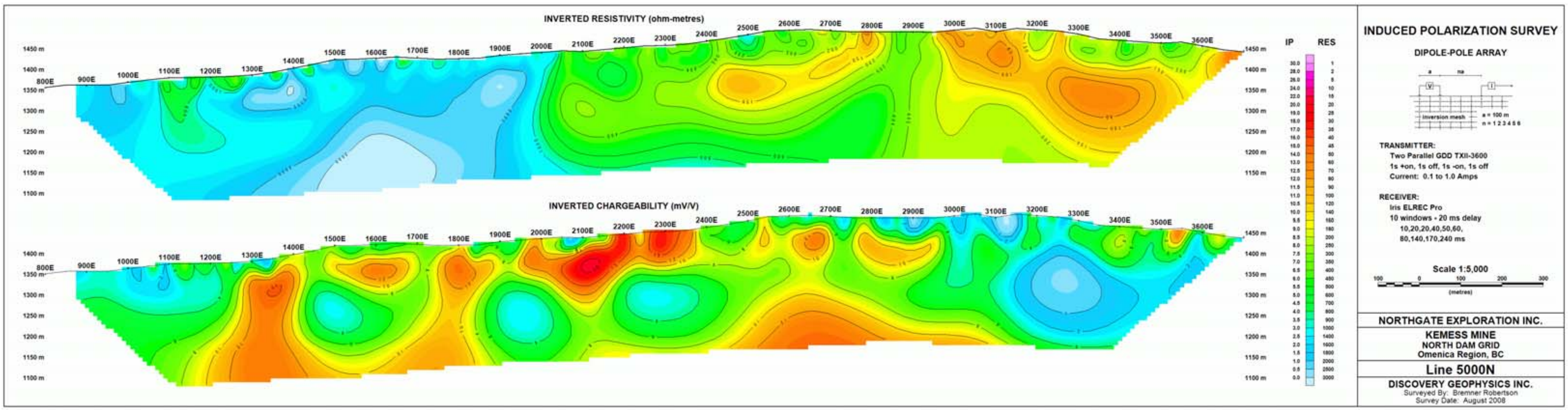
NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

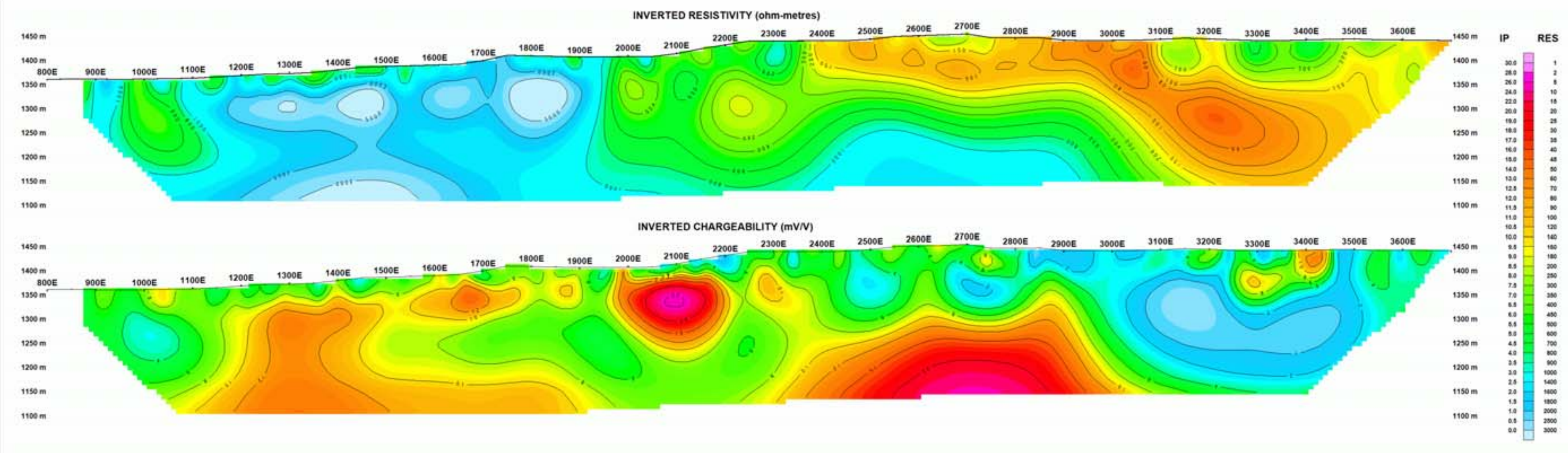
Line 4600N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008


INVERTED RESISTIVITY (ohm-metres)
INVERTED CHARGEABILITY (mV/V)
800E
900E
1000E
1100E
1200E
1300E
1400E
1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2600E
2700E
2800E
2900E
3000E
3100E
3200E
3300E
3400E
3500E
3600E
1550 m
1500 m
1450 m
1400 m
1350 m
1300 m
1250 m
1200 m
1150 m
1100 m
IP
RES
INDUCED POLARIZATION SURVEY
DIPOLE-POLE ARRAY
a
na
V
I
Inversion mesh
a = 100 m
n = 1 2 3 4 5 6
TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps
RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms
Scale 1:5,000
100 0 100 200 300
(metres)
NORTHGATE EXPLORATION INC.
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC
Line 4800N
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

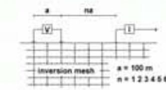


INVERTED RESISTIVITY (ohm-metres)
INVERTED CHARGEABILITY (mV/V)
800E
900E
1000E
1100E
1200E
1300E
1400E
1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2600E
2700E
2800E
2900E
3000E
3100E
3200E
3300E
3400E
3500E
3600E
1450 m
1400 m
1350 m
1300 m
1250 m
1200 m
1150 m
1100 m
IP
RES
INDUCED POLARIZATION SURVEY
DIPOLE-POLE ARRAY
a
na
V
I
inversion mesh
a = 100 m
n = 1 2 3 4 5 6
TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps
RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms
Scale 1:5,000
100
0
100
200
300
(metres)
NORTHGATE EXPLORATION INC.
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC
Line 5000N
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

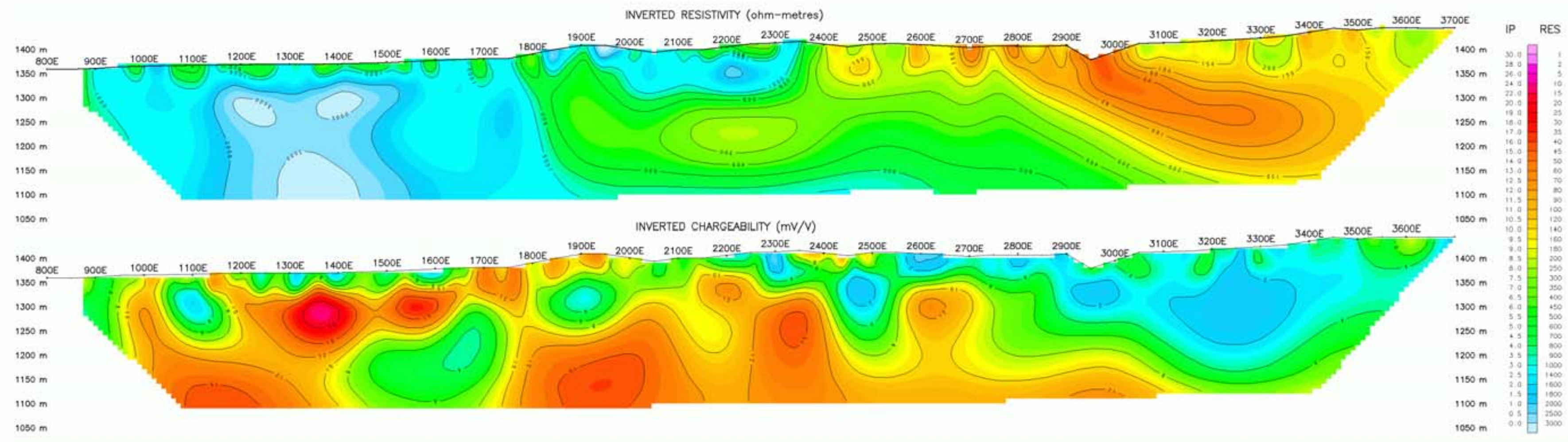
Scale 1:5,000
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

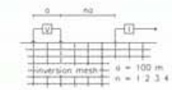
Line 5200N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

NORTHGATE EXPLORATION INC.

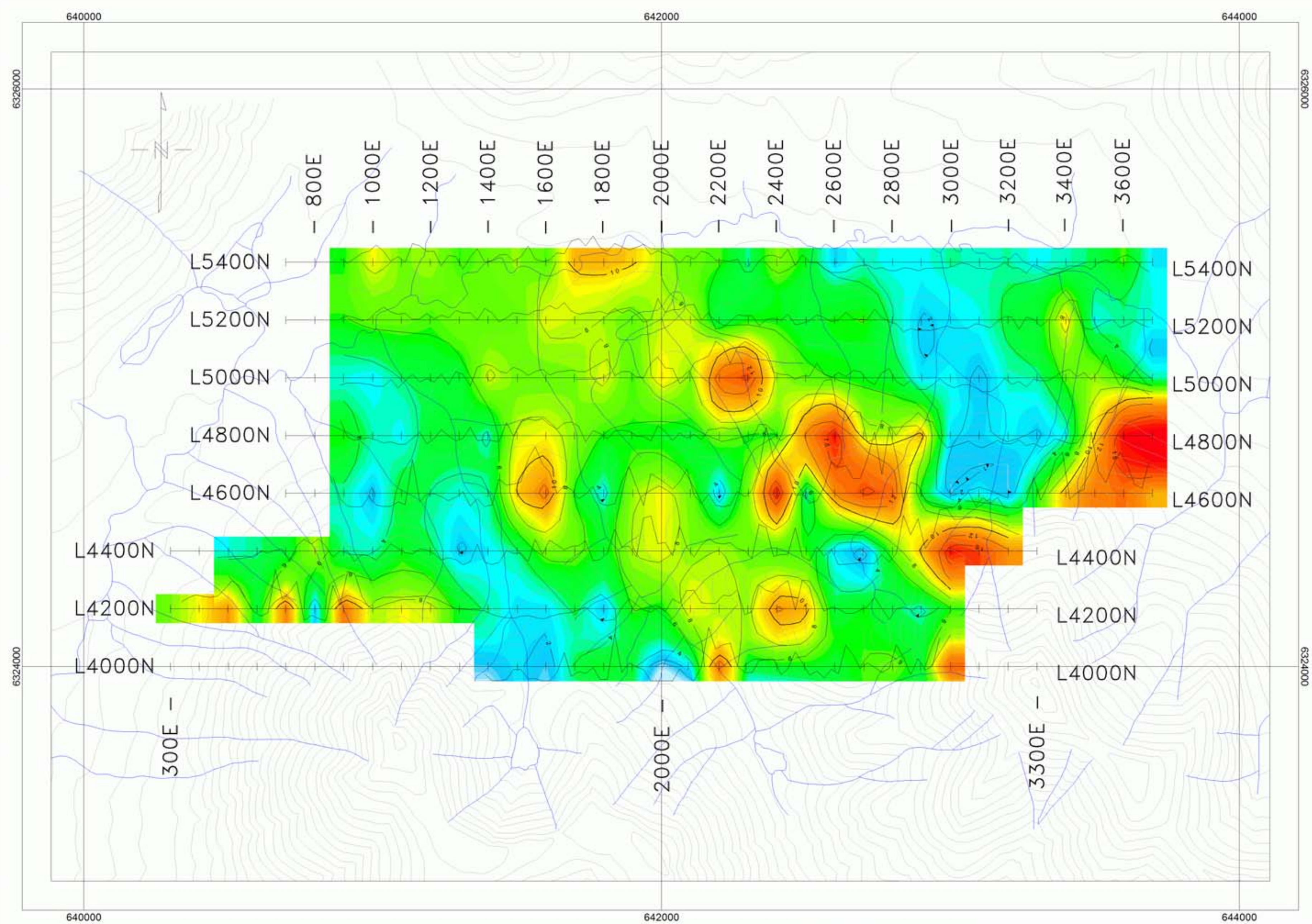
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 5400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

APPENDIX E

Inversion Maps



Chargeability (mV/V)

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

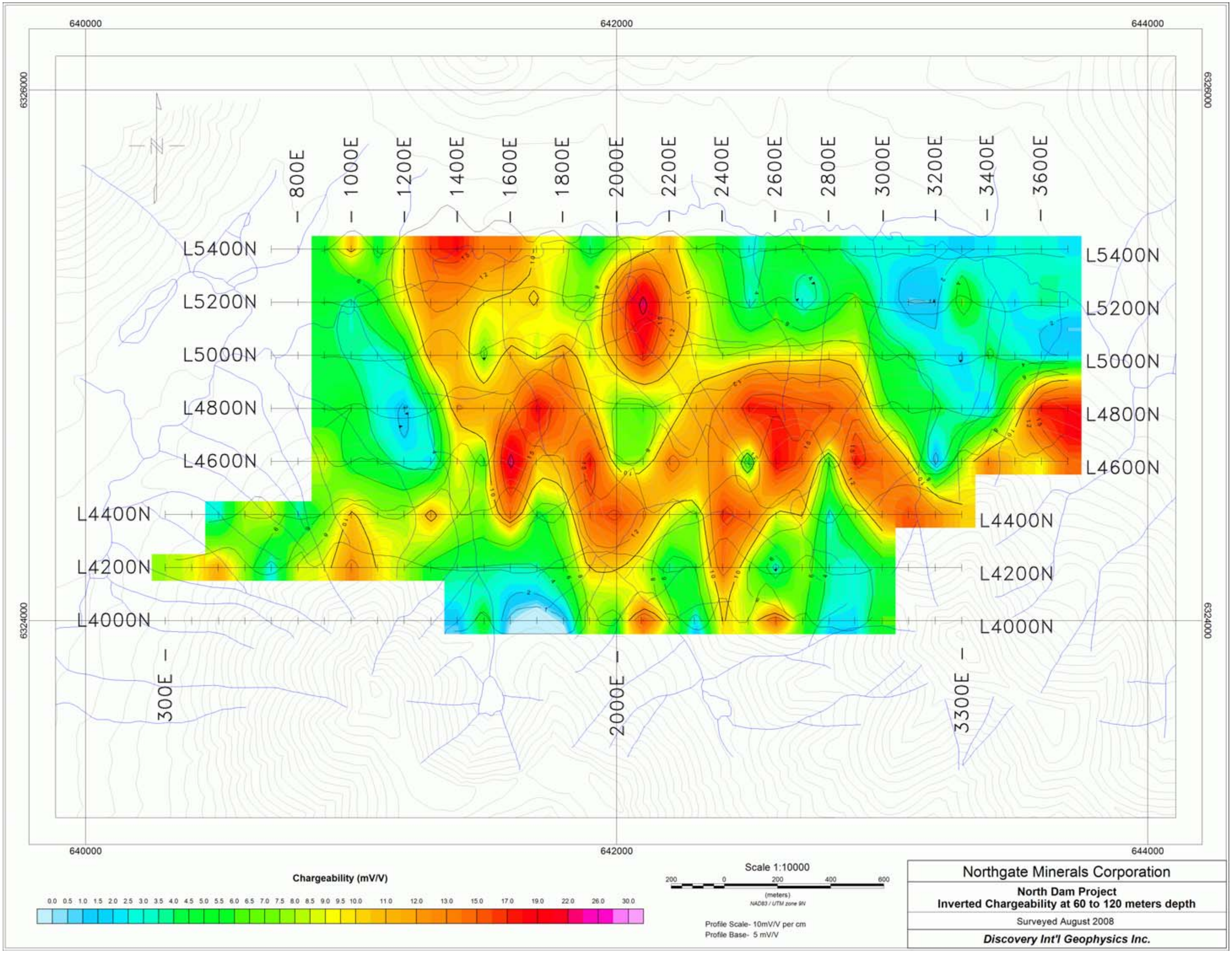
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V

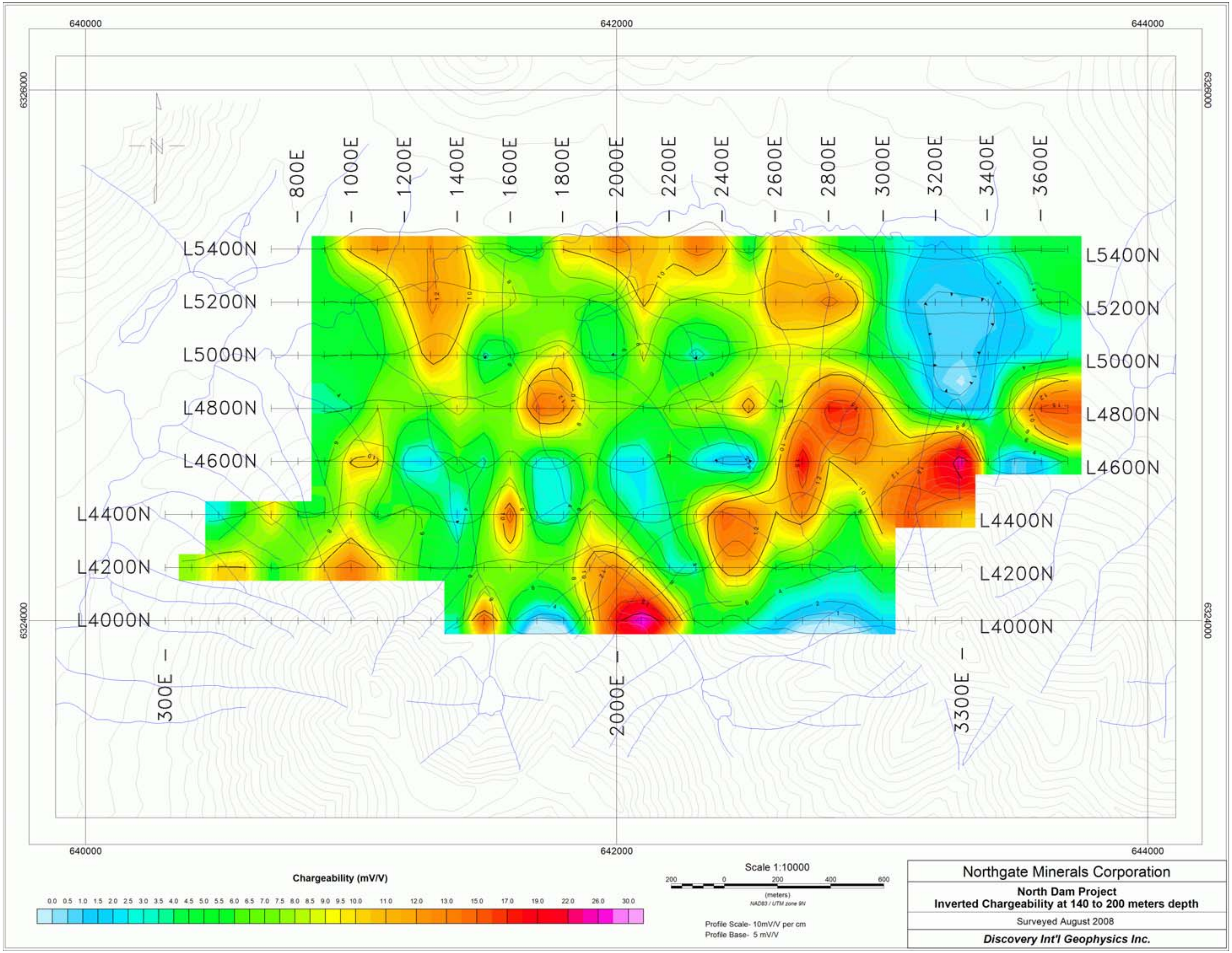
Northgate Minerals Corporation

North Dam Project
Inverted Chargeability at 0 to 40 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.


640000
642000
644000
6326000
6324000
800E
1000E
1200E
1400E
1600E
1800E
2000E
2200E
2400E
2600E
2800E
3000E
3200E
3400E
3600E
L5400N
L5200N
L5000N
L4800N
L4600N
L4400N
L4200N
L4000N
300E
2000E
3300E
Chargeability (mV/V)
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0
Scale 1:10000
200 0 200 400 600
(meters)
NAD83 / UTM zone 9N
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V
Northgate Minerals Corporation
North Dam Project
Inverted Chargeability at 60 to 120 meters depth
Surveyed August 2008
Discovery Int'l Geophysics Inc.

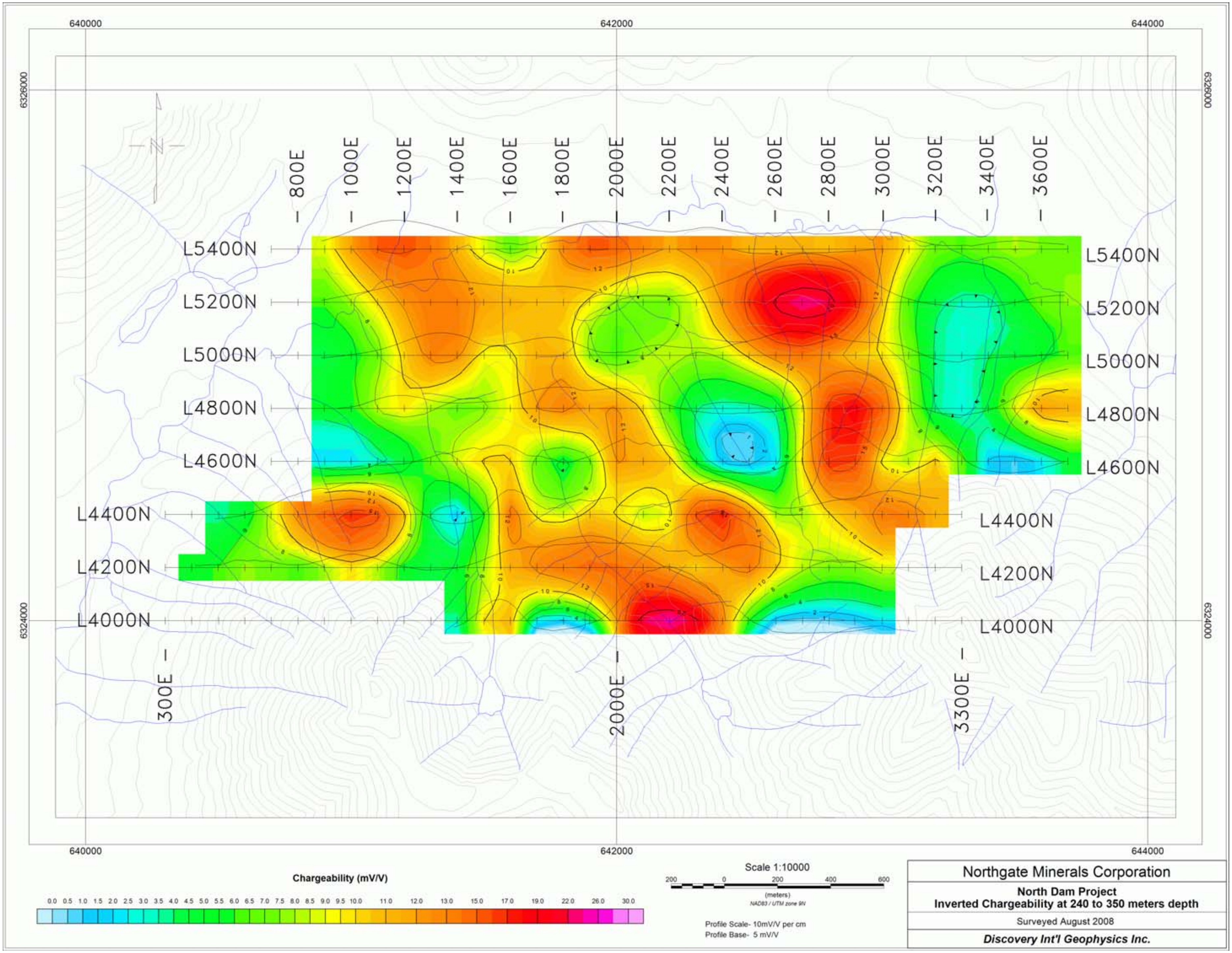


Northgate Minerals Corporation

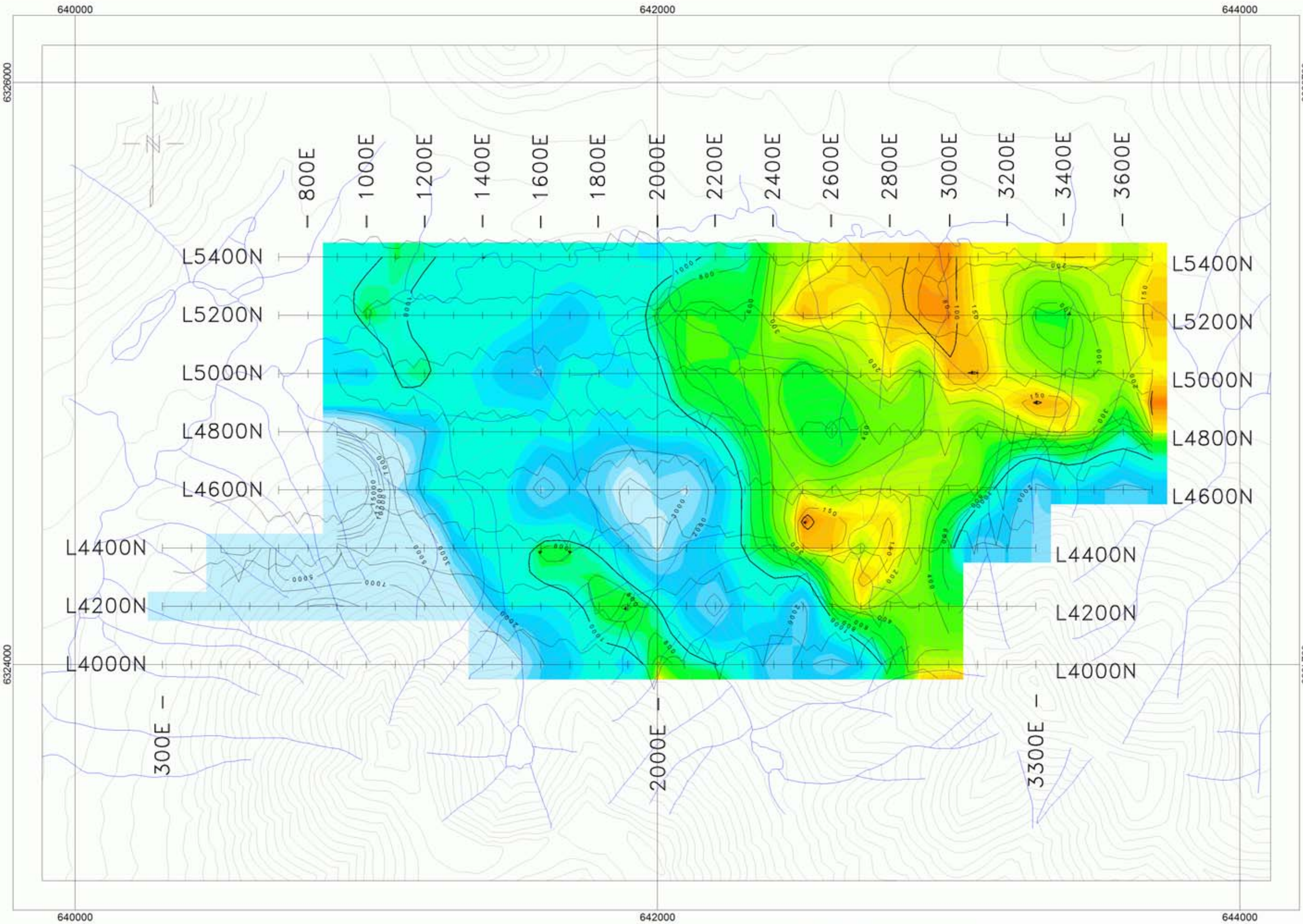
North Dam Project
Inverted Chargeability at 140 to 200 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



640000
642000
644000
6326000
6324000
800E
1000E
1200E
1400E
1600E
1800E
2000E
2200E
2400E
2600E
2800E
3000E
3200E
3400E
3600E
L5400N
L5200N
L5000N
L4800N
L4600N
L4400N
L4200N
L4000N
300E
2000E
3300E
Chargeability (mV/V)
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0
Scale 1:10000
200 0 200 400 600
(meters)
NAD83 / UTM zone 9N
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V
Northgate Minerals Corporation
North Dam Project
Inverted Chargeability at 240 to 350 meters depth
Surveyed August 2008
Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

Profile Scale- 1 log cycle per cm

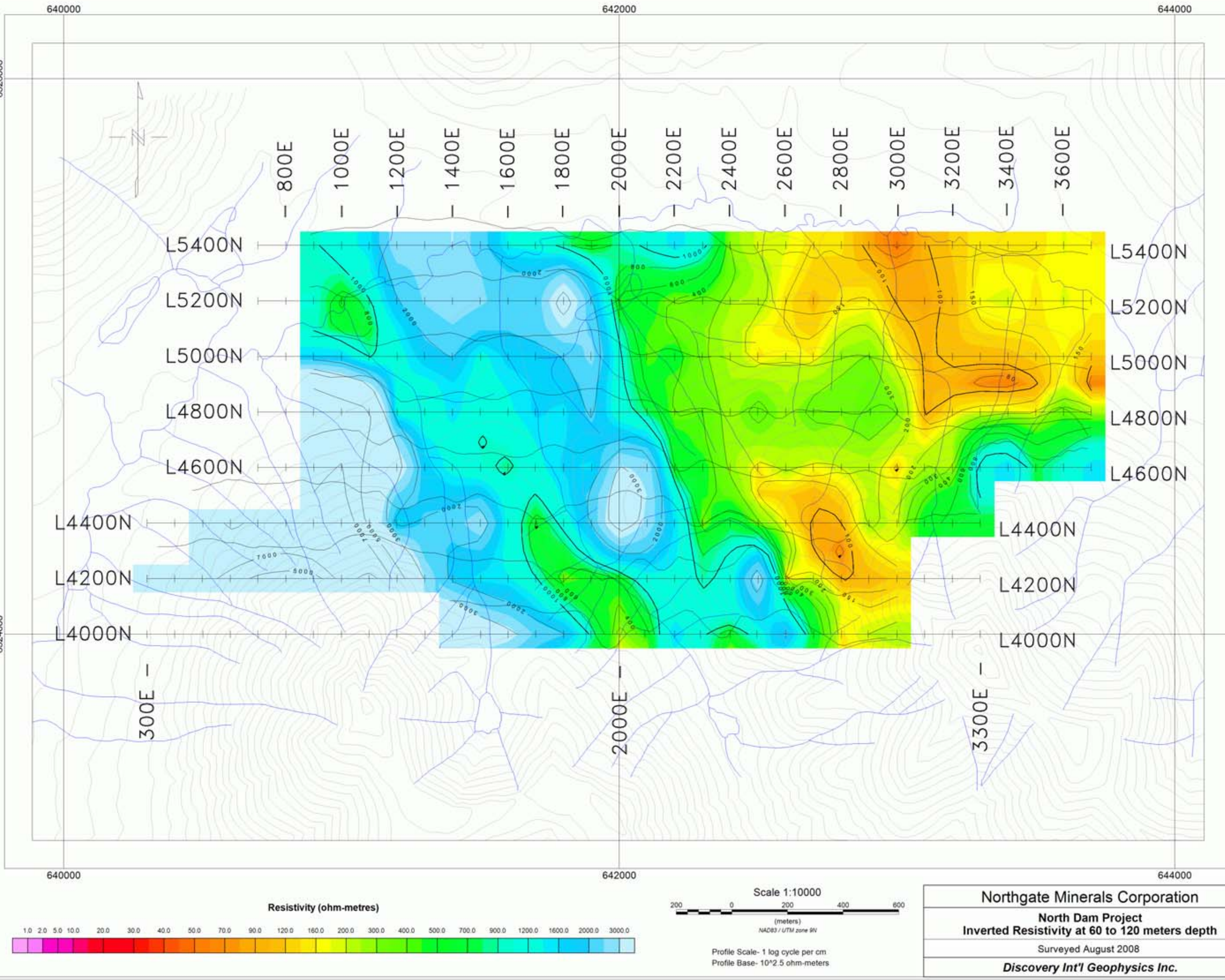
Profile Base- 10^2.5 ohm-meters

Northgate Minerals Corporation

North Dam Project
Inverted Resistivity at 0 to 40 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.

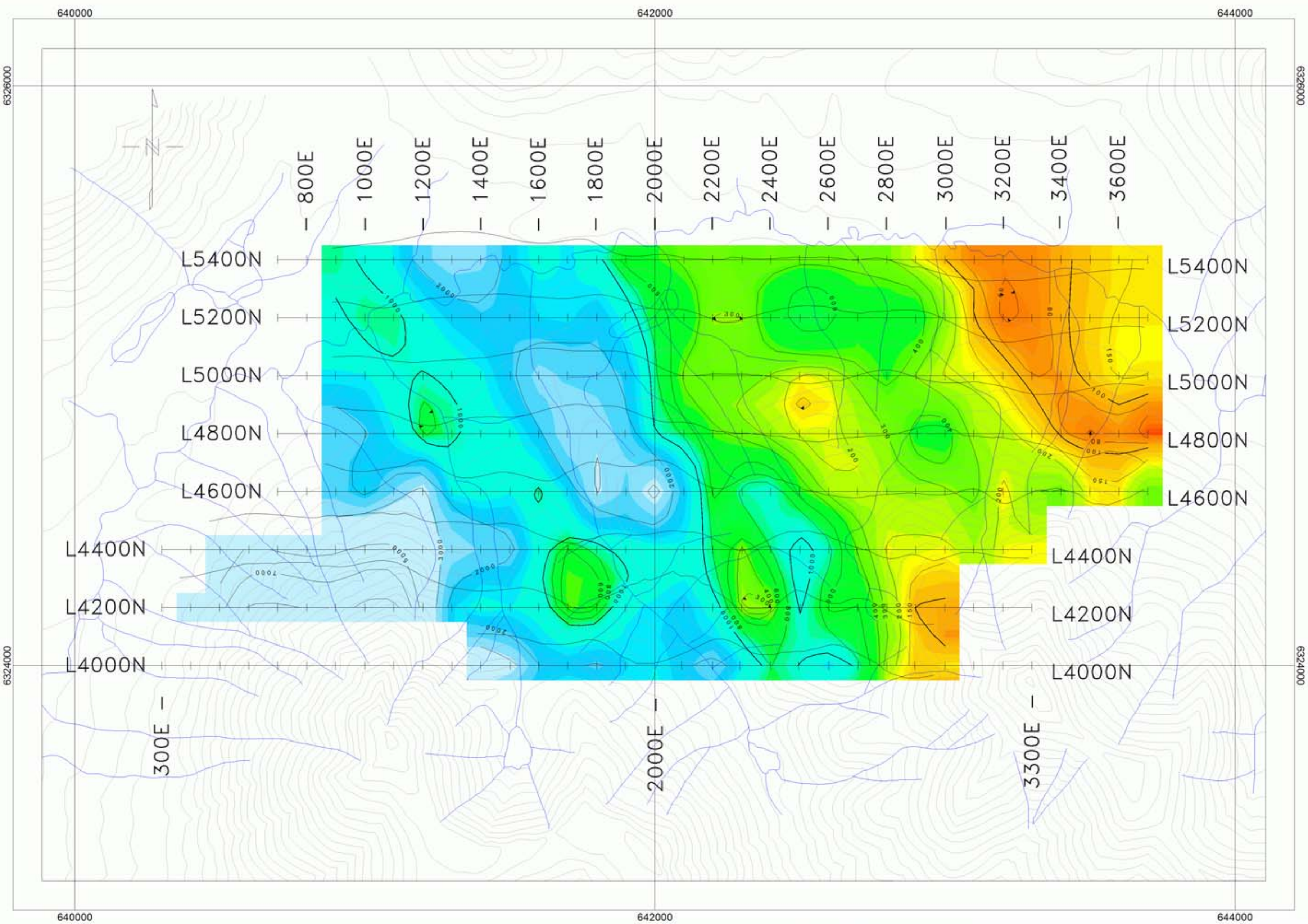


Northgate Minerals Corporation

North Dam Project
Inverted Resistivity at 60 to 120 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

Profile Scale- 1 log cycle per cm

Profile Base- 10^2.5 ohm-meters

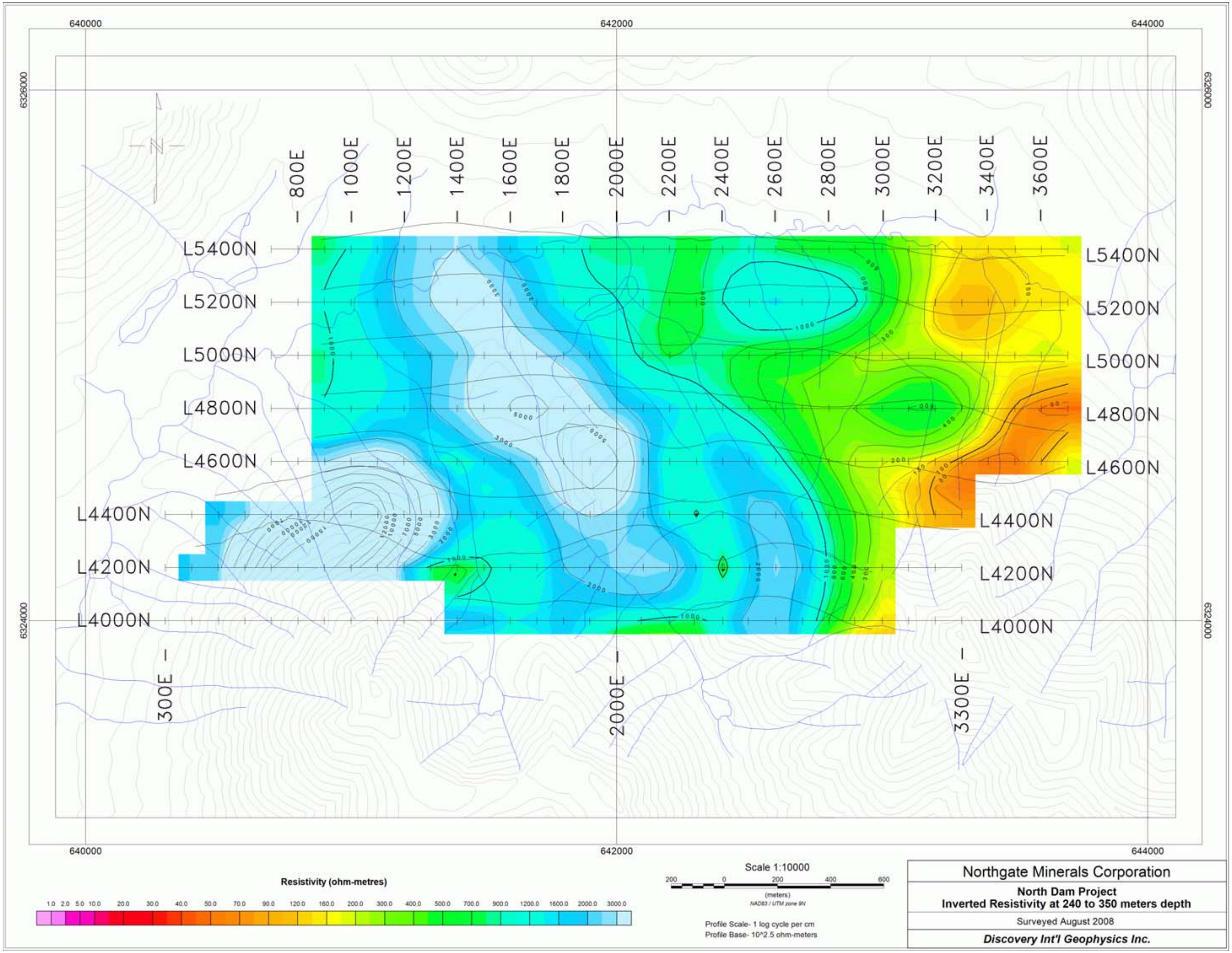
Northgate Minerals Corporation

North Dam Project

Inverted Resistivity at 140 to 200 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



640000
642000
644000
6326000
6324000
800E
1000E
1200E
1400E
1600E
1800E
2000E
2200E
2400E
2600E
2800E
3000E
3200E
3400E
3600E
L5400N
L5200N
L5000N
L4800N
L4600N
L4400N
L4200N
L4000N
300E
2000E
3300E
Resistivity (ohm-metres)
1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0
Scale 1:10000
200 0 200 400 600
(meters)
NAD83 / UTM zone 9N
Profile Scale- 1 log cycle per cm
Profile Base- 10^2.5 ohm-meters
Northgate Minerals Corporation
North Dam Project
Inverted Resistivity at 240 to 350 meters depth
Surveyed August 2008
Discovery Int'l Geophysics Inc.

APPENDIX F

Digital Data on CD

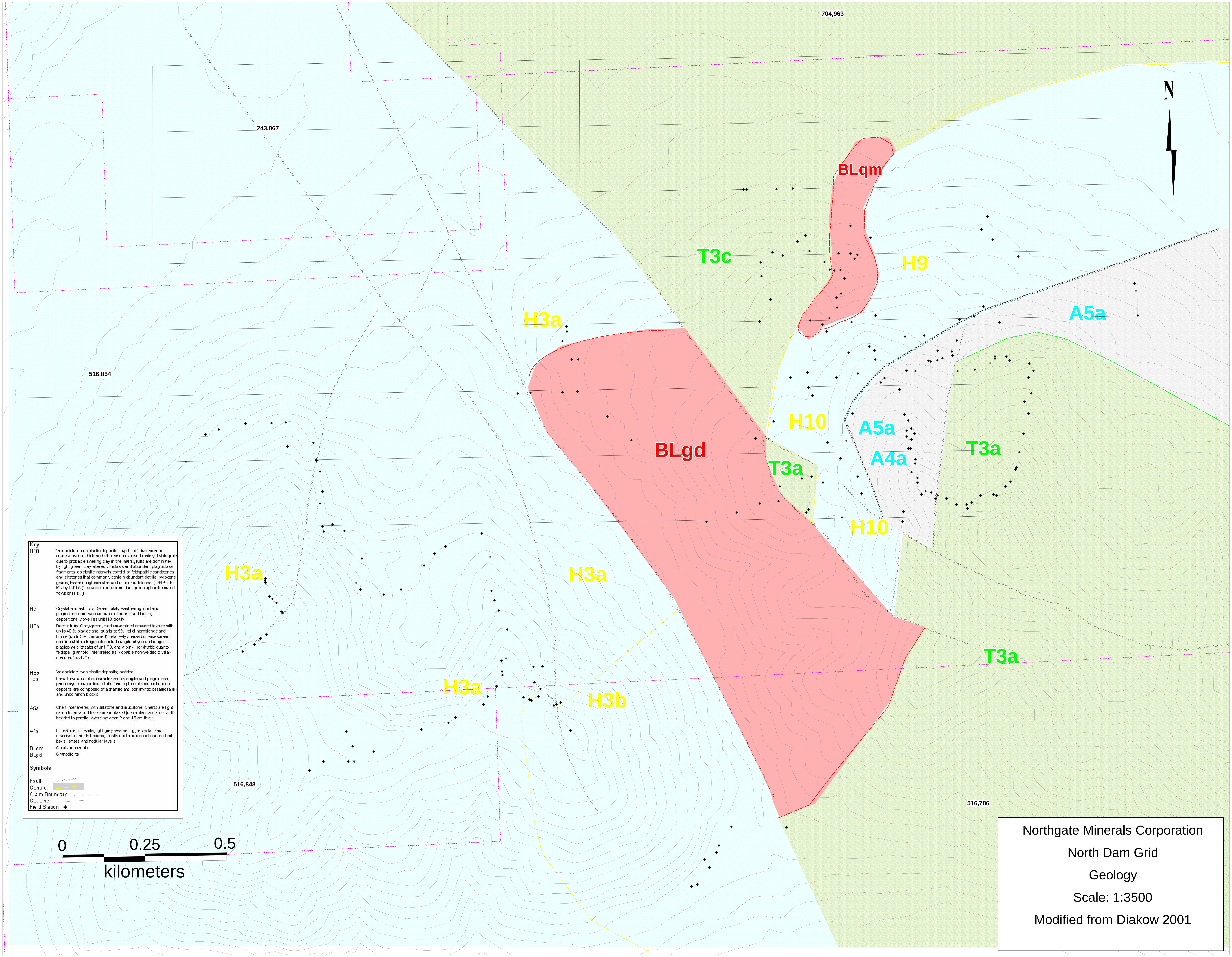
15.0 Maps

Maps

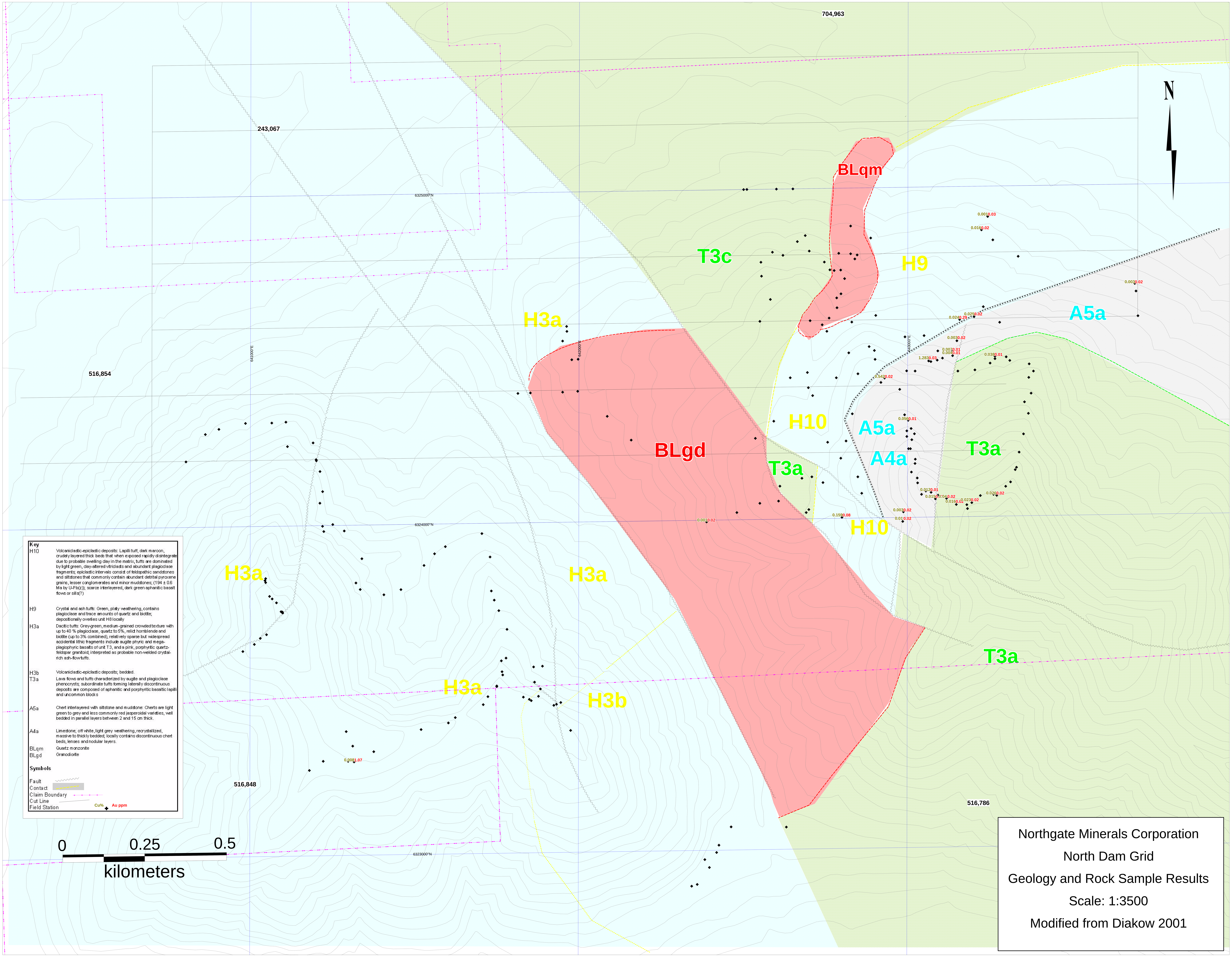
Inversion Pseudosections

Pseudosections

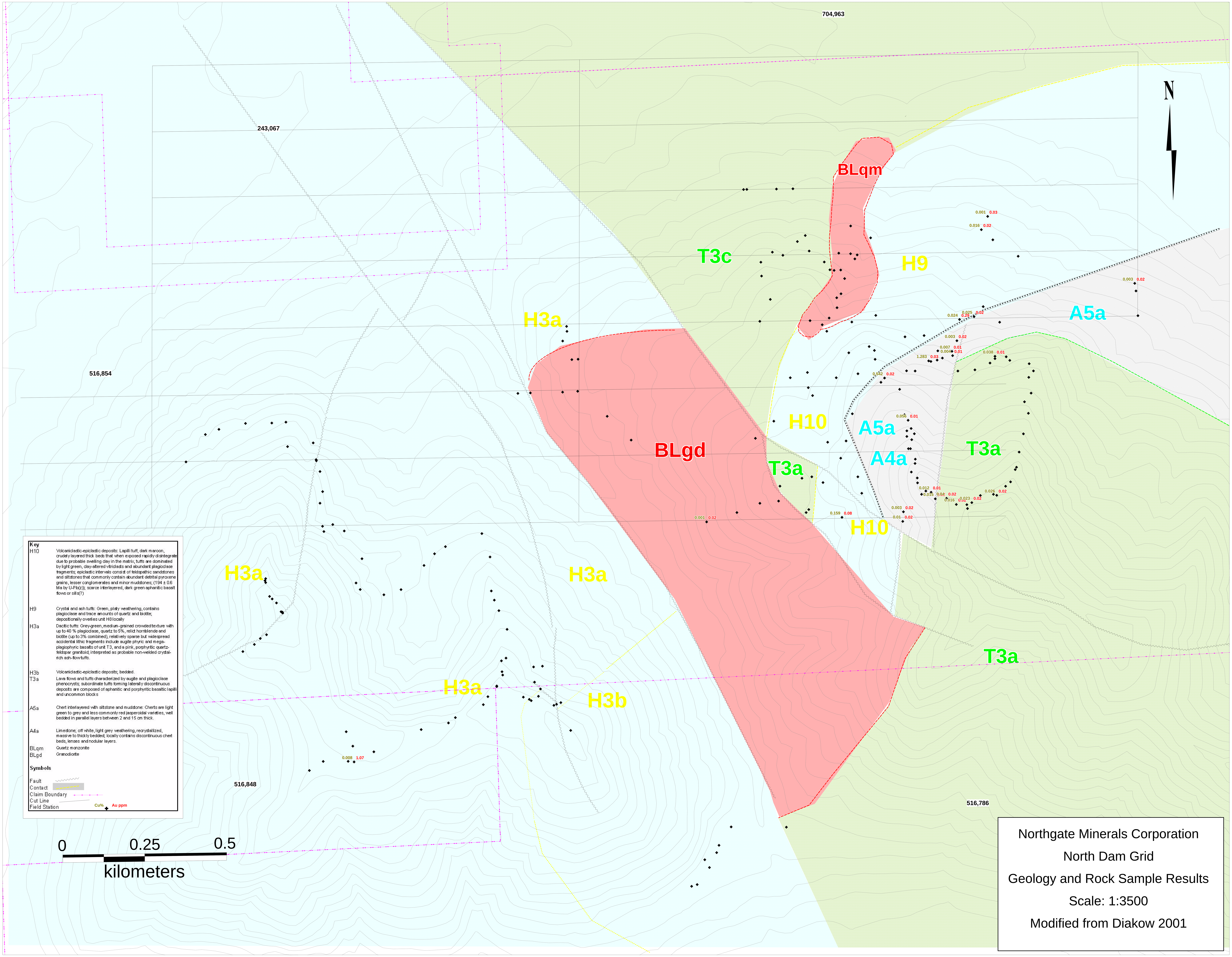
North Dam Claim Map



704,963
243,067
516,854
516,848
516,786
N
BLqm
T3c
H9
H3a
A5a
BLgd
H10
A5a
A4a
T3a
T3a
H10
H3a
H3a
T3a
H3a
H3b
Key
H10 Volcaniclastic-epiclastic deposits: Lapilli tuff, dark maroon, crudely layered thick beds that when exposed rapidly disintegrate due to probable swelling clay in the matrix, tuffs are dominated by light green, clay-altered vitriclasts and abundant plagioclase fragments; epiclastic intervals consist of feldspathic sandstones and siltstones that commonly contain abundant detrital pyroxene grains, lesser conglomerates and minor mudstones; (194 ± 0.6 Ma by U-Pb(z)); scarce interlayered, dark green aphanitic basalt flows or sills(?)
H9 Crystal and ash tuffs: Green, platy weathering, contains plagioclase and trace amounts of quartz and biotite; depositionally overlies unit H8 locally
H3a Dacitic tuffs: Grey-green, medium-grained crowded texture with up to 40 % plagioclase, quartz to 5%, relict hornblende and biotite (up to 3% combined), relatively sparse but widespread accidental lithic fragments include augite phyric and mega-plagiophyric basalts of unit T3, and a pink, porphyritic quartz-feldspar granitoid; interpreted as probable non-welded crystal-rich ash-flow tuffs.
H3b Volcaniclastic-epiclastic deposits; bedded.
T3a Lava flows and tuffs characterized by augite and plagioclase phenocrysts; subordinate tuffs forming laterally discontinuous deposits are composed of aphanitic and porphyritic basaltic lapilli and uncommon blocks
A5a Chert interlayered with siltstone and mudstone: Cherts are light green to grey and less commonly red jasperoidal varieties, well bedded in parallel layers between 2 and 15 cm thick.
A4a Limestone; off white, light grey weathering, recrystallized, massive to thickly bedded; locally contains discontinuous chert beds, lenses and nodular layers.
BLqm Quartz monzonite
BLgd Granodiorite
Symbols
Fault
Contact
Claim Boundary
Cut Line
Field Station
0
0.25
0.5
kilometers
Northgate Minerals Corporation
North Dam Grid
Geology
Scale: 1:3500
Modified from Diakow 2001



Northgate Minerals Corporation
North Dam Grid
Geology and Rock Sample Results
Scale: 1:3500
Modified from Diakow 2001
N
0
0.25
0.5
kilometers
Key
H10 Volcaniclastic-epiclastic deposits: Lapilli tuff, dark maroon, crudely layered thick beds that when exposed rapidly disintegrate due to probable swelling clay in the matrix, tuffs are dominated by light green, clay-altered vitriclasts and abundant plagioclase fragments; epiclastic intervals consist of feldspathic sandstones and siltstones that commonly contain abundant detrital pyroxene grains, lesser conglomerates and minor mudstones; (194 ± 0.6 Ma by U-Pb(z)); scarce interlayered, dark green aphanitic basalt flows or sills(?)
H9 Crystal and ash tuffs: Green, platy weathering, contains plagioclase and trace amounts of quartz and biotite; depositionally overlies unit H8 locally
H3a Dacitic tuffs: Grey-green, medium-grained crowded texture with up to 40 % plagioclase, quartz to 5%, relict hornblende and biotite (up to 3% combined), relatively sparse but widespread accidental lithic fragments include augite phyric and mega-plagiophyric basalts of unit T3, and a pink, porphyritic quartz-feldspar granitoid; interpreted as probable non-welded crystal-rich ash-flow tuffs.
H3b Volcaniclastic-epiclastic deposits; bedded.
T3a Lava flows and tuffs characterized by augite and plagioclase phenocrysts; subordinate tuffs forming laterally discontinuous deposits are composed of aphanitic and porphyritic basaltic lapilli and uncommon blocks
A5a Chert interlayered with siltstone and mudstone: Cherts are light green to grey and less commonly red jasperoidal varieties, well bedded in parallel layers between 2 and 15 cm thick.
A4a Limestone; off white, light grey weathering, recrystallized, massive to thickly bedded; locally contains discontinuous chert beds, lenses and nodular layers.
BLqm Quartz monzonite
BLgd Granodiorite
Symbols
Fault
Contact
Claim Boundary
Cut Line
Field Station
Cu%
Au ppm
704,963
243,067
516,854
516,848
516,786
BLqm
BLgd
T3c
H9
H3a
H3b
H10
A5a
A4a
T3a


704,963
243,067
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516,786
BLqm
BLgd
T3c
H9
H3a
H3a
H3a
H3a
H3b
H10
H10
A5a
A5a
A4a
T3a
T3a
T3a
N
Key
H10 Volcaniclastic-epiclastic deposits: Lapilli tuff, dark maroon, crudely layered thick beds that when exposed rapidly disintegrate due to probable swelling clay in the matrix; tuffs are dominated by light green, clay-altered vitriclasts and abundant plagioclase fragments; epiclastic intervals consist of feldspathic sandstones and siltstones that commonly contain abundant detrital pyroxene grains, lesser conglomerates and minor mudstones; (194 ± 0.6 Ma by U-Pb(z)); scarce interlayered, dark green aphanitic basalt flows or sills(?)
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H3b Volcaniclastic-epiclastic deposits; bedded.
T3a Lava flows and tuffs characterized by augite and plagioclase phenocrysts; subordinate tuffs forming laterally discontinuous deposits are composed of aphanitic and porphyritic basaltic lapilli and uncommon blocks
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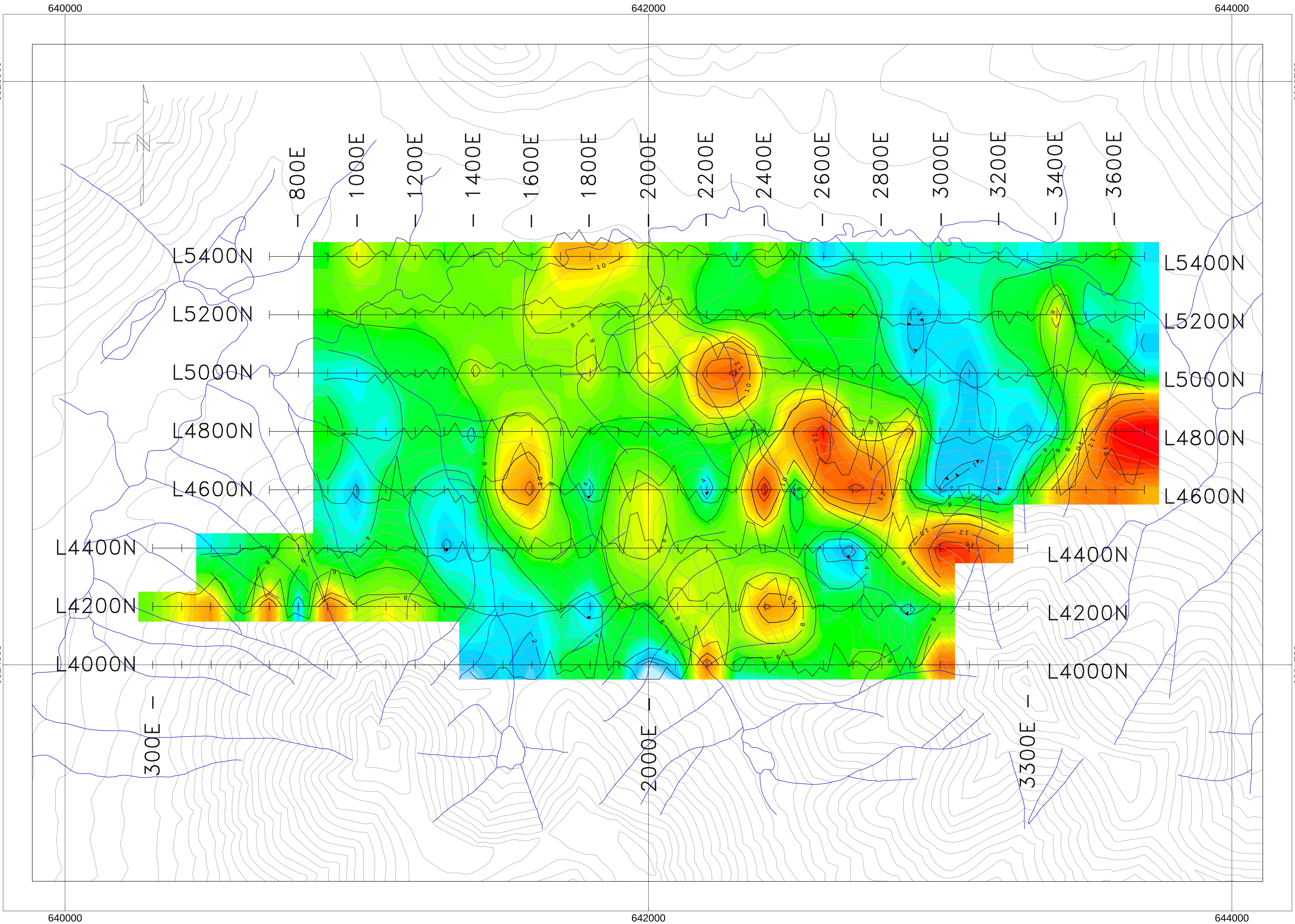
BLqm Quartz monzonite
BLgd Granodiorite
Symbols
Fault
Contact
Claim Boundary
Cut Line
Field Station
Cu%
Au ppm
0
0.25
0.5
kilometers
Northgate Minerals Corporation
North Dam Grid
Geology and Rock Sample Results
Scale: 1:3500
Modified from Diakow 2001



Chargeability (mV/V)

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

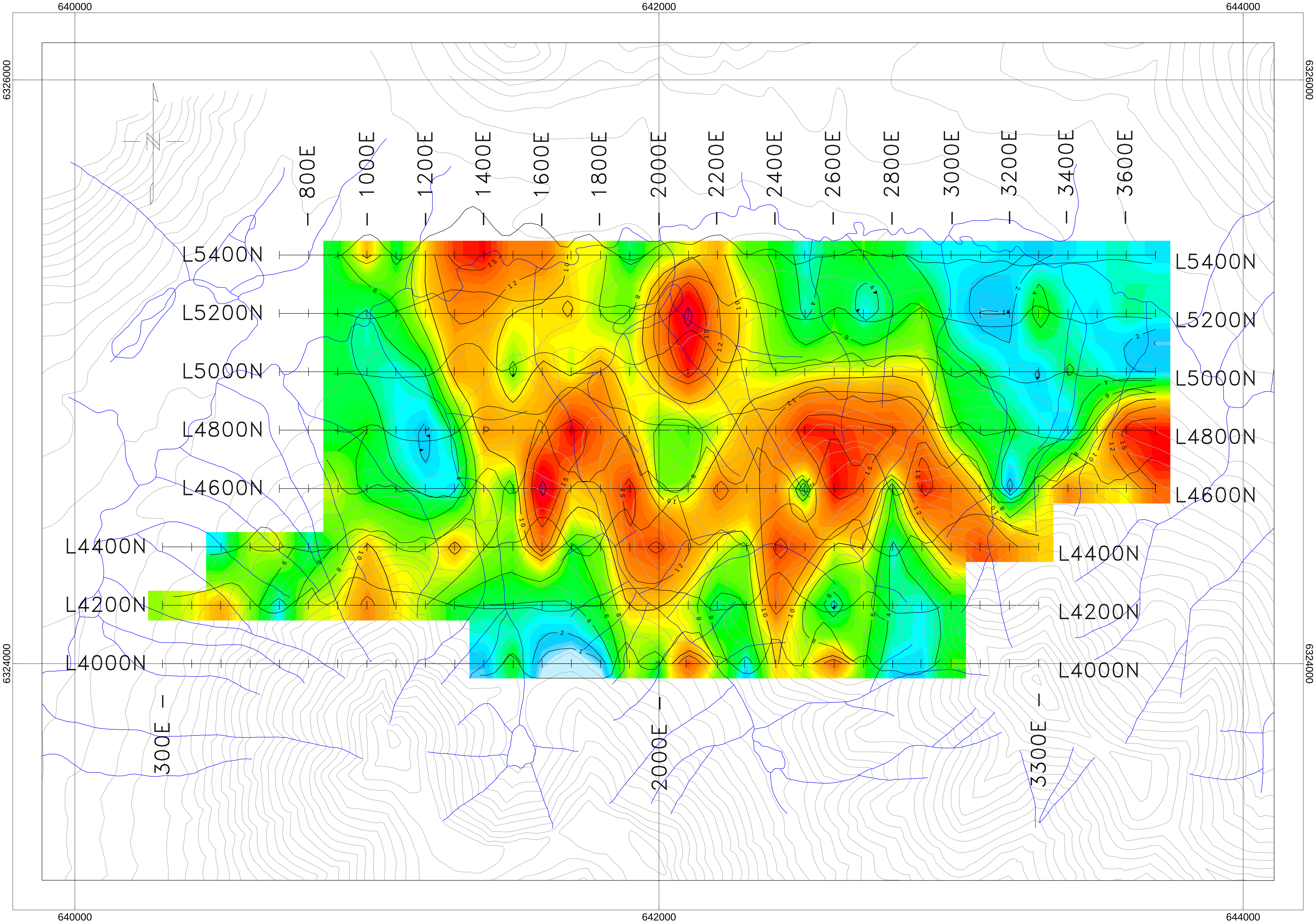
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V

Northgate Minerals Corporation

North Dam Project
Inverted Chargeability at 0 to 40 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Chargeability (mV/V)

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

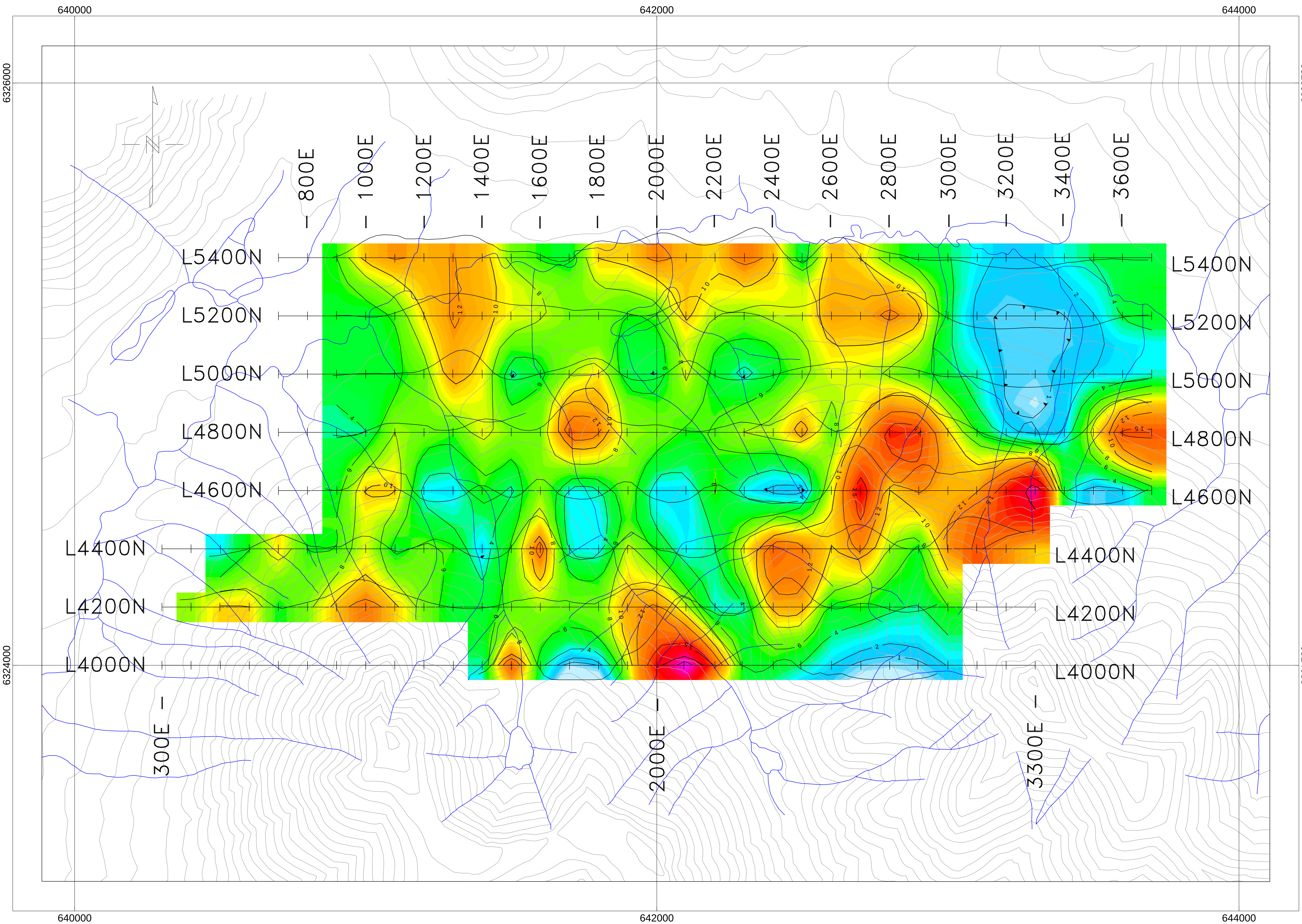
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V

Northgate Minerals Corporation

North Dam Project
Inverted Chargeability at 60 to 120 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Chargeability (mV/V)

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 11.0 12.0 13.0 15.0 17.0 19.0 22.0 26.0 30.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

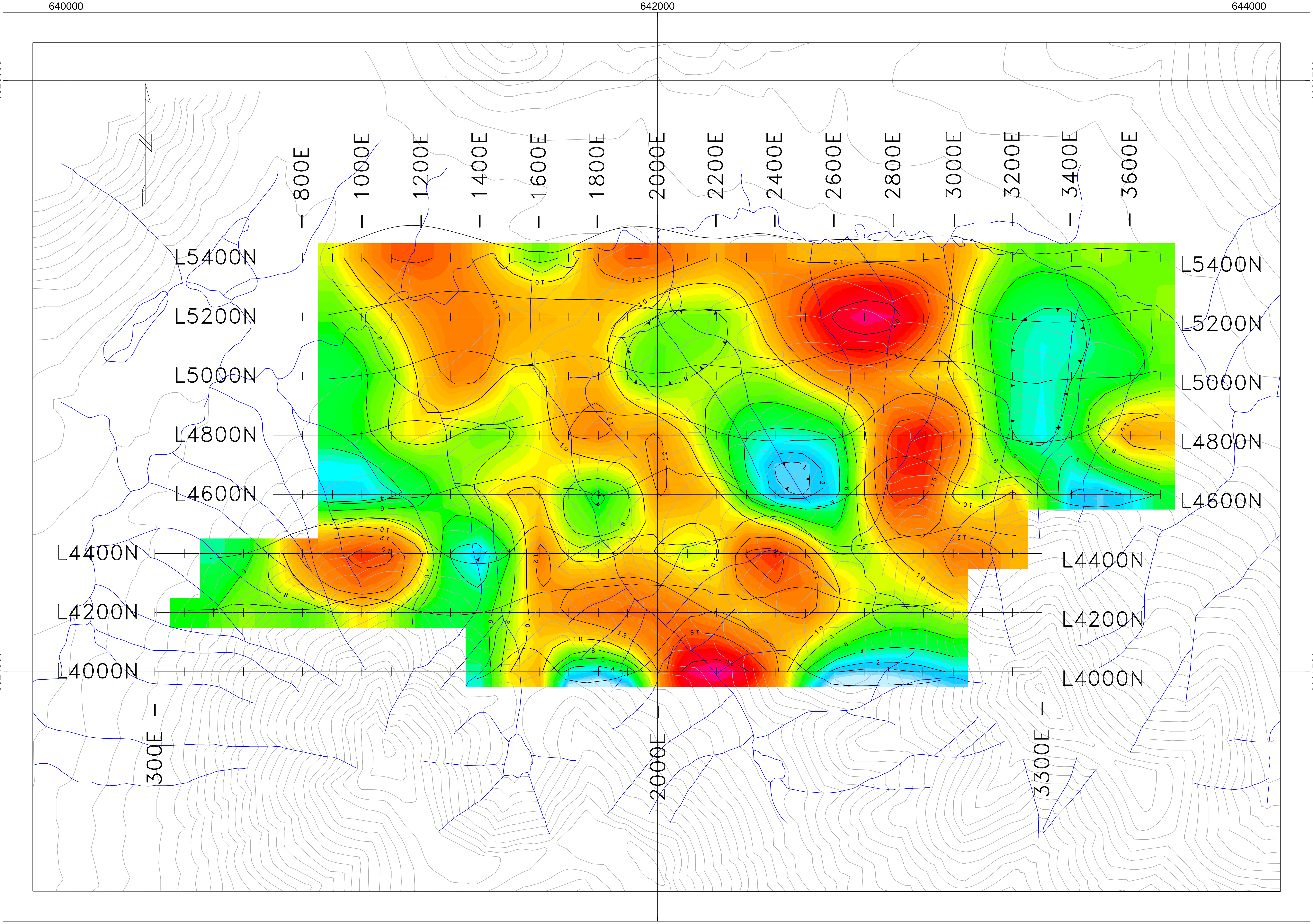
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V

Northgate Minerals Corporation

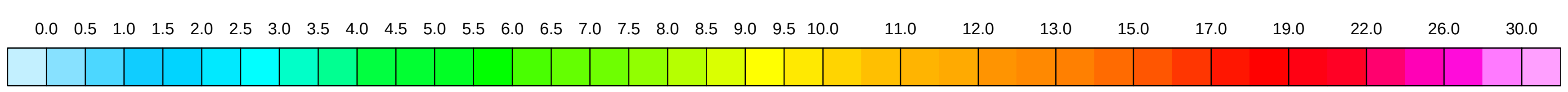
North Dam Project
Inverted Chargeability at 140 to 200 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Chargeability (mV/V)



Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

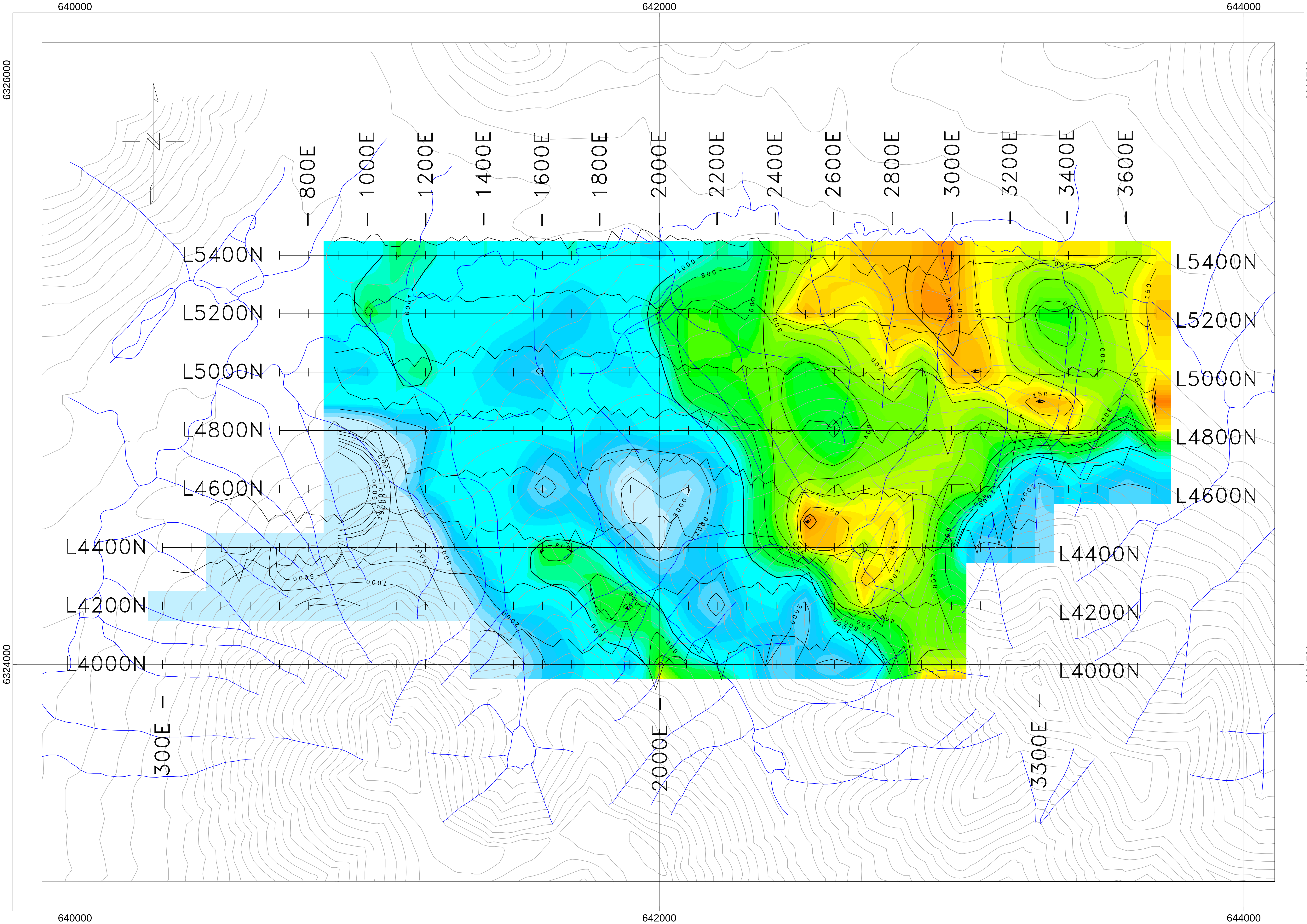
Profile Scale- 10mV/V per cm
Profile Base- 5 mV/V

Northgate Minerals Corporation

North Dam Project
Inverted Chargeability at 240 to 350 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

Profile Scale- 1 log cycle per cm

Profile Base- 10^2.5 ohm-meters

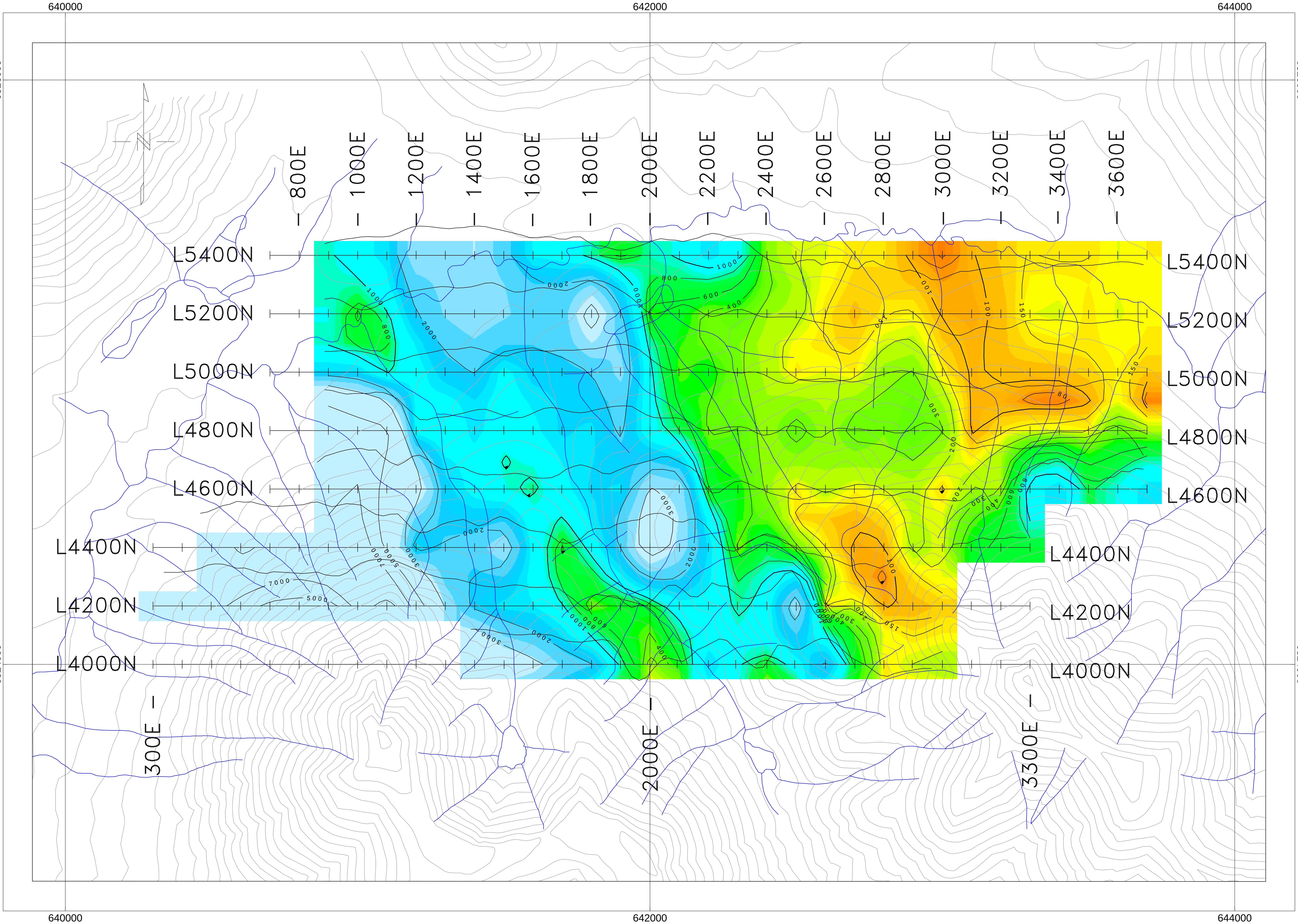
Northgate Minerals Corporation

North Dam Project

Inverted Resistivity at 0 to 40 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

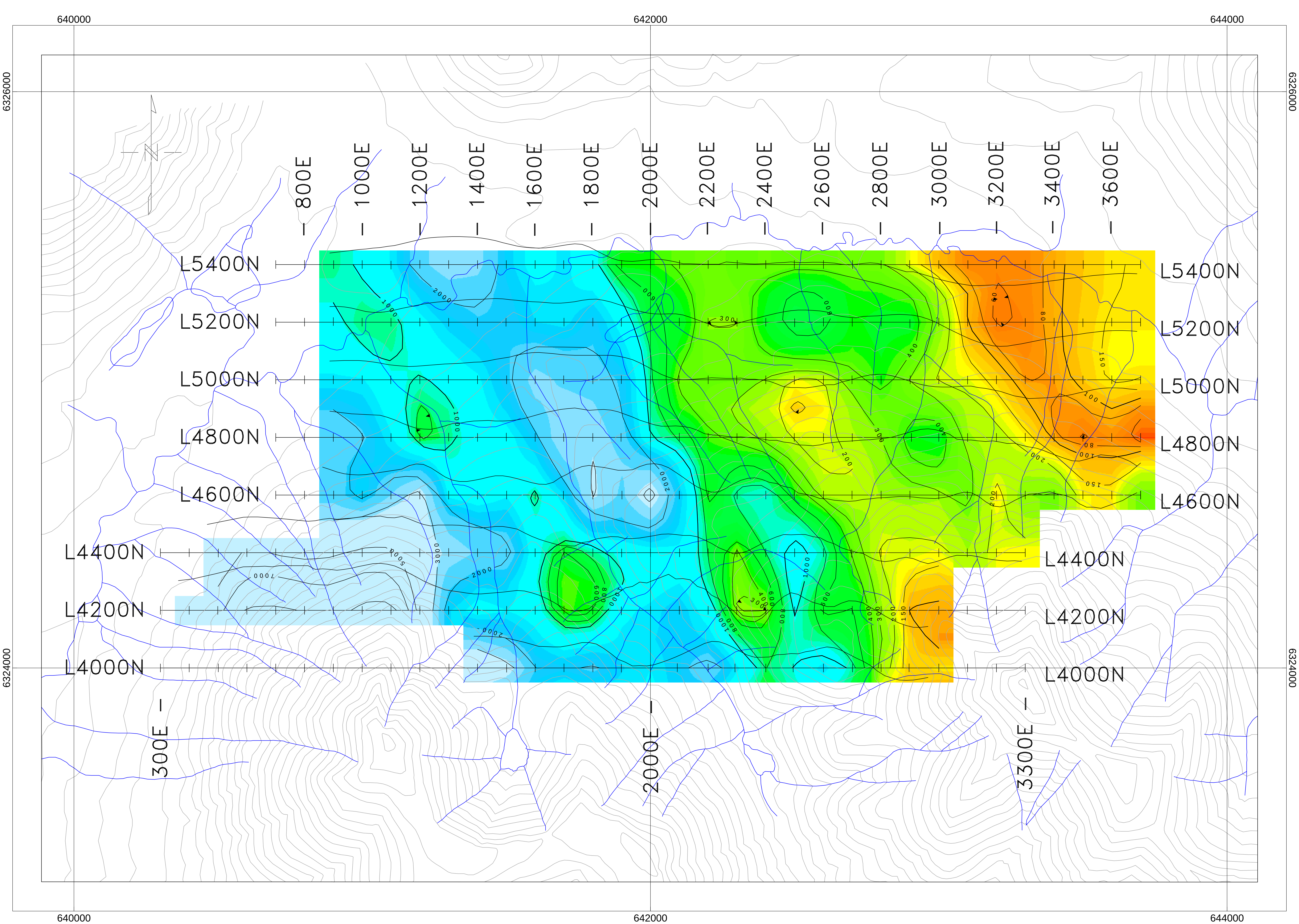
Profile Scale- 1 log cycle per cm
Profile Base- 10^2.5 ohm-meters

Northgate Minerals Corporation

North Dam Project
Inverted Resistivity at 60 to 120 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

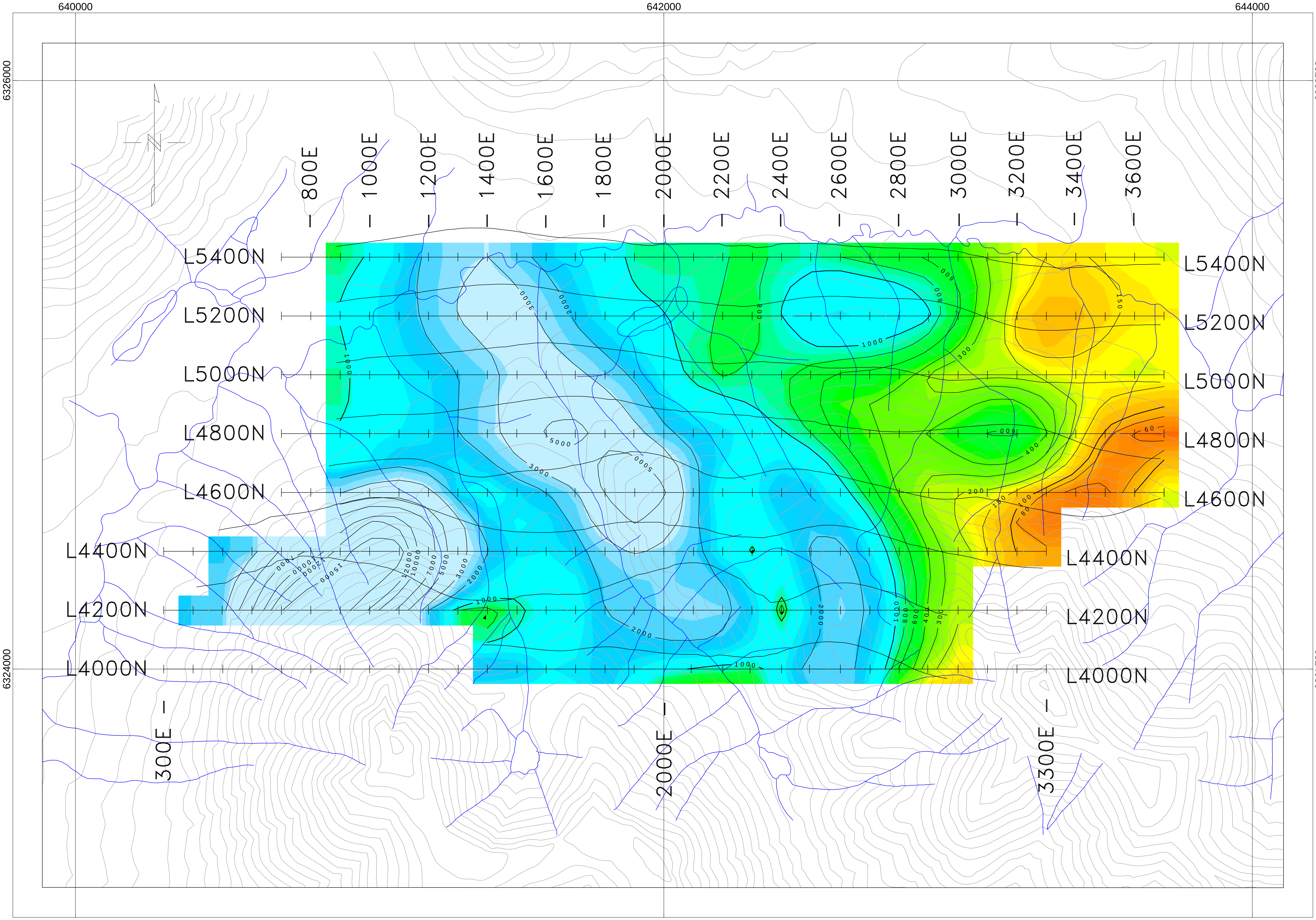
Profile Scale- 1 log cycle per cm
Profile Base- 10^2.5 ohm-meters

Northgate Minerals Corporation

North Dam Project
Inverted Resistivity at 140 to 200 meters depth

Surveyed August 2008

Discovery Int'l Geophysics Inc.



Resistivity (ohm-metres)

1.0 2.0 5.0 10.0 20.0 30.0 40.0 50.0 70.0 90.0 120.0 160.0 200.0 300.0 400.0 500.0 700.0 900.0 1200.0 1600.0 2000.0 3000.0

Scale 1:10000

200 0 200 400 600

(meters)

NAD83 / UTM zone 9N

Profile Scale- 1 log cycle per cm

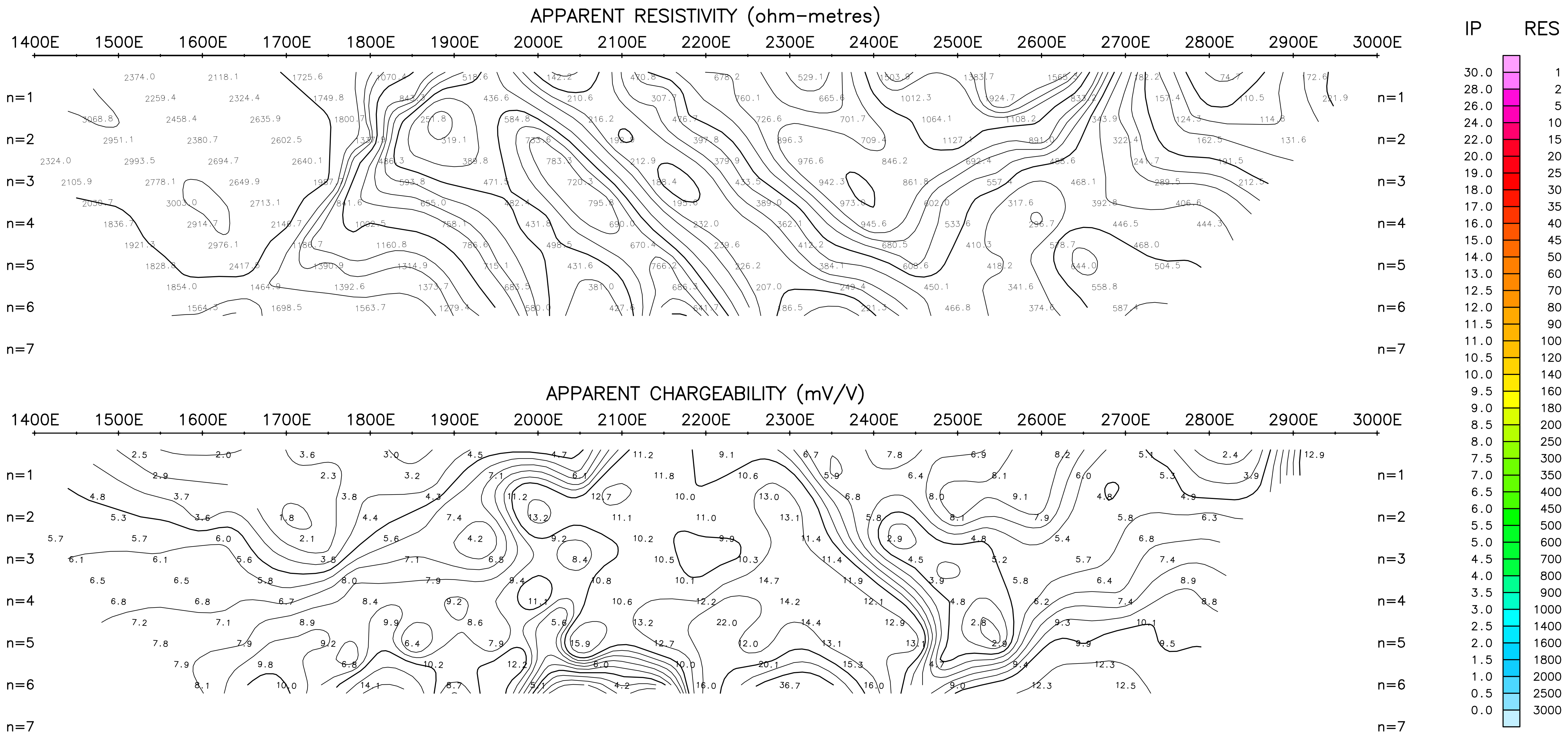
Profile Base- 10^2.5 ohm-meters

Northgate Minerals Corporation

North Dam Project
Inverted Resistivity at 240 to 350 meters depth

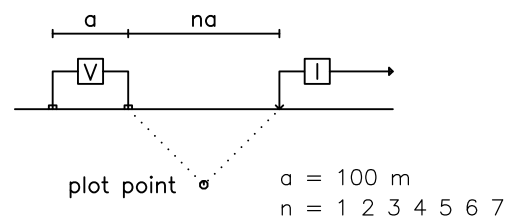
Surveyed August 2008

Discovery Int'l Geophysics Inc.



INDUCED POLARIZATION SURVEY

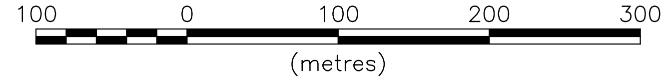
DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

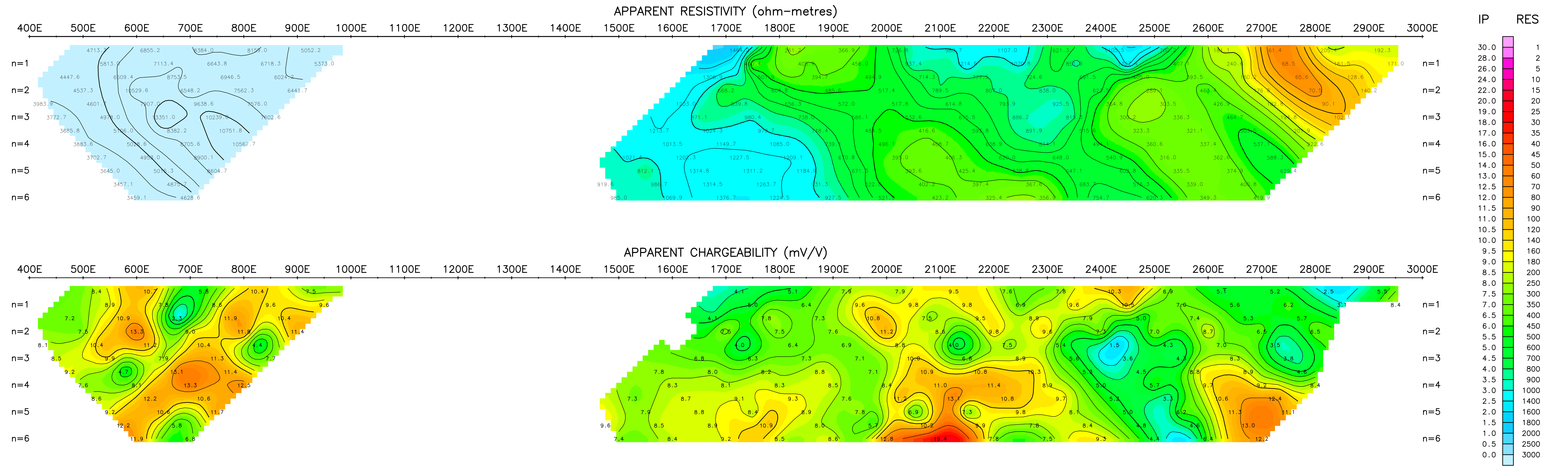


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

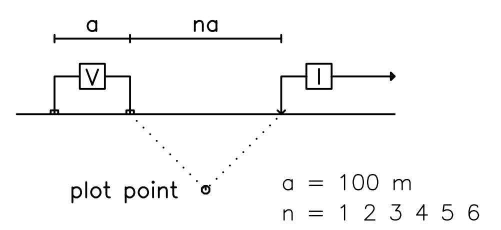
Line 4000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

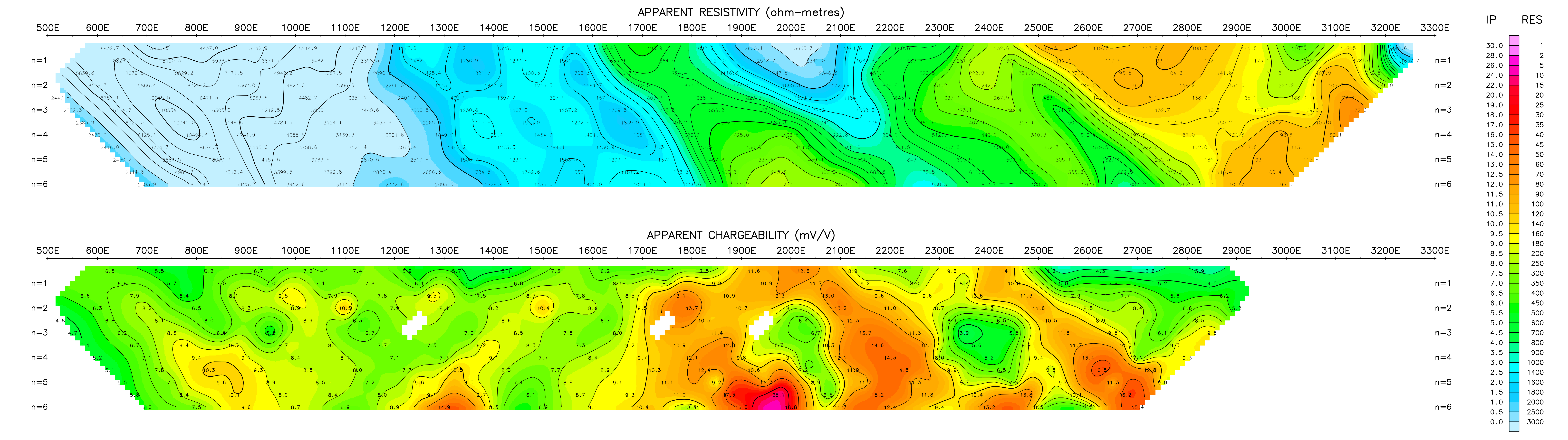
Scale 1:5,000
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

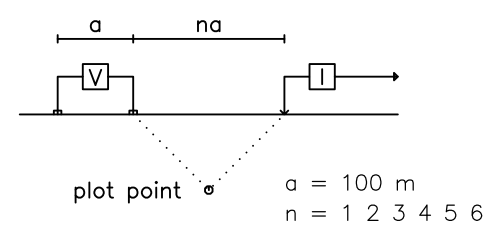
Line 4200N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

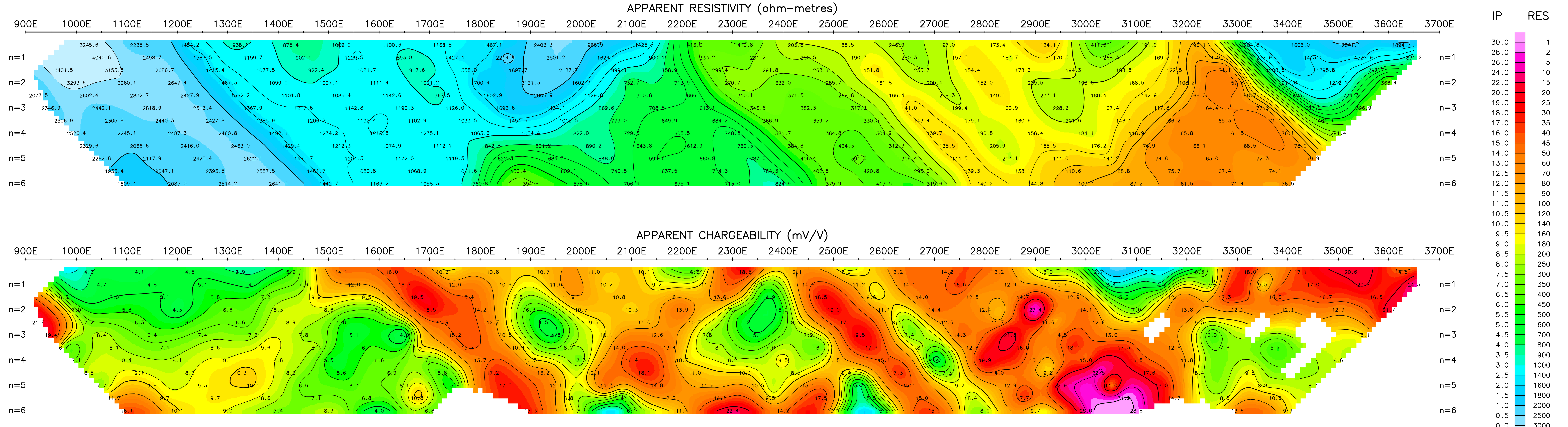
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

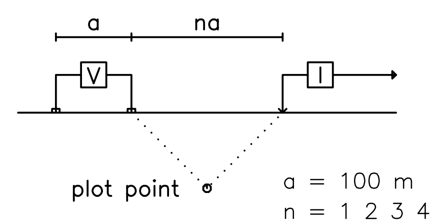
Line 4400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

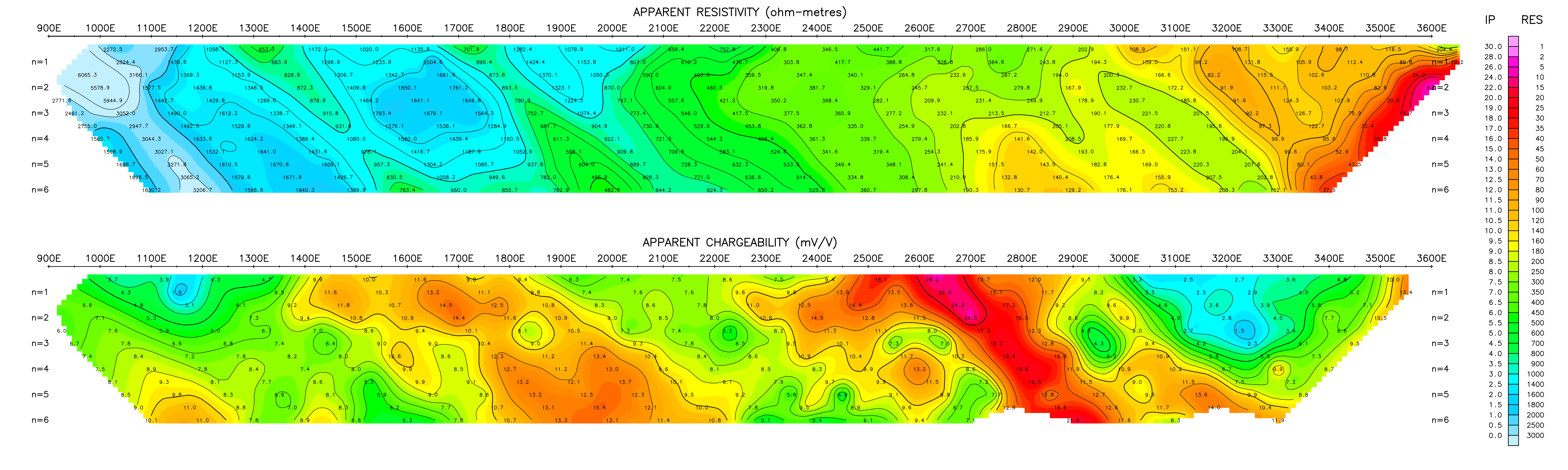
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 4600N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

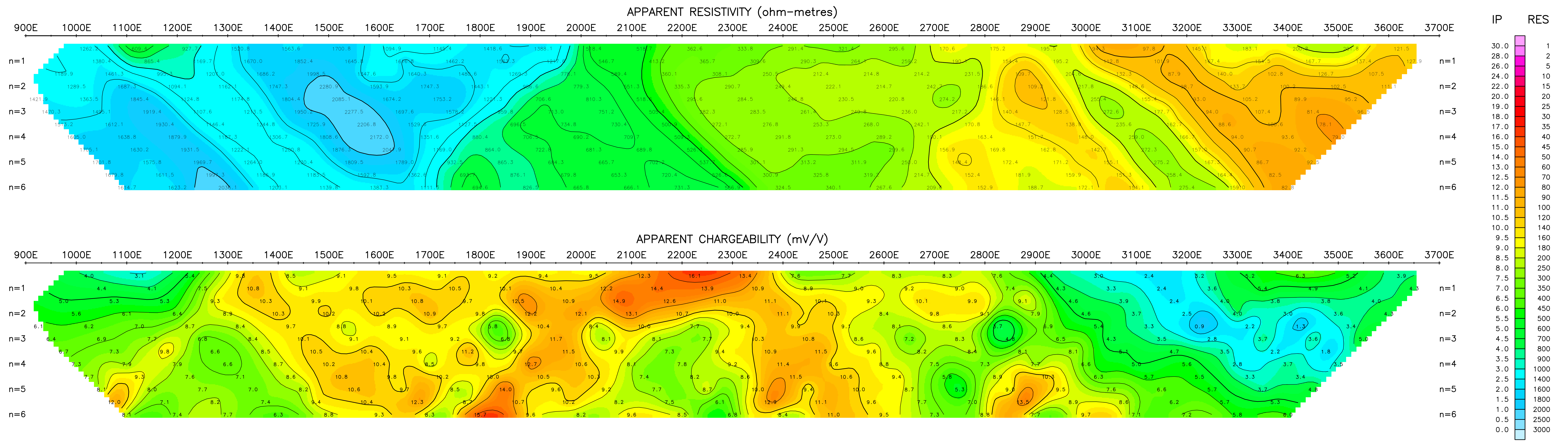
Scale 1:5,000
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

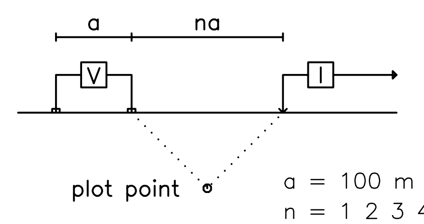
Line 4800N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

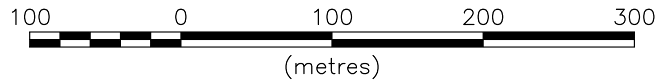
DIPOLE–POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII–3600
1s +on, 1s off, 1s –on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows – 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

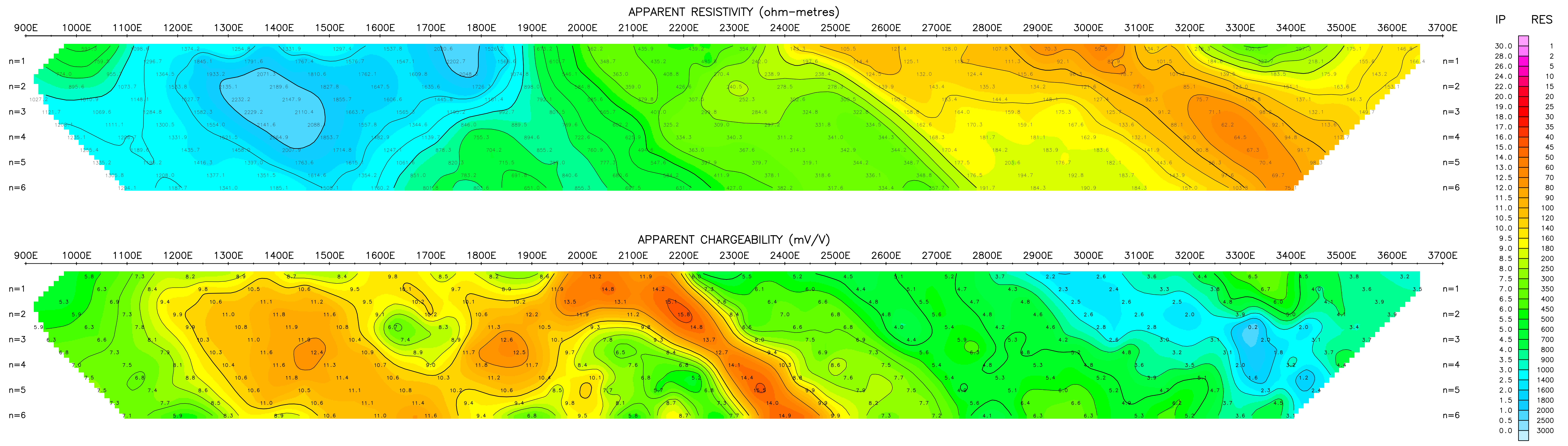


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

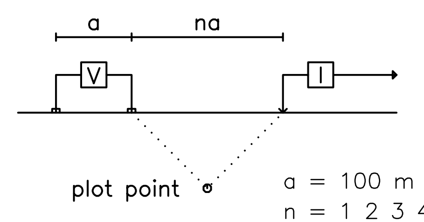
Line 5000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000
100 0 100 200 300
(metres)

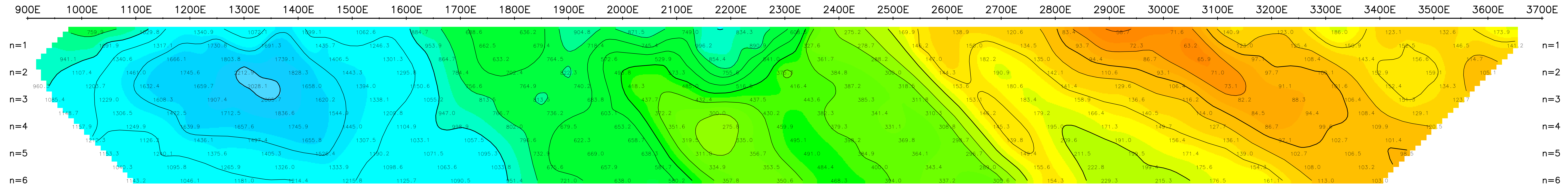
NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

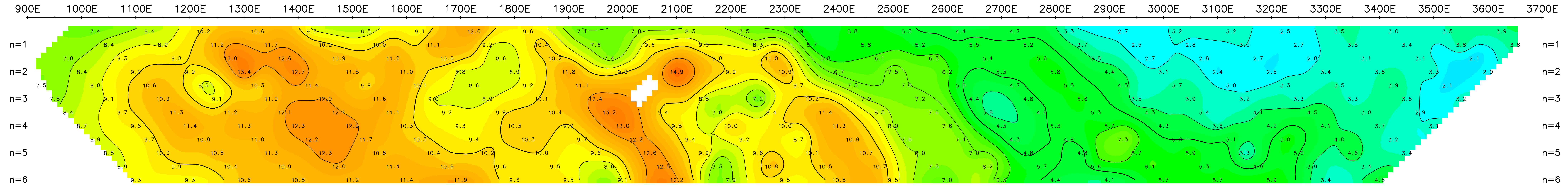
Line 5200N

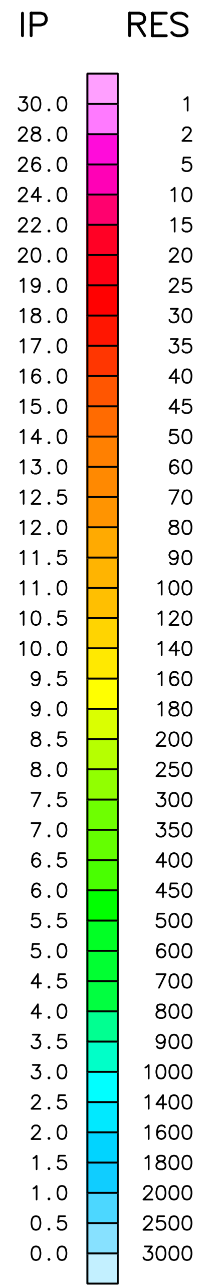
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

APPARENT RESISTIVITY (ohm-metres)



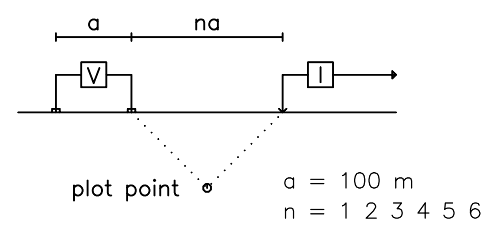
APPARENT CHARGEABILITY (mV/V)





INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

100 0 100 200 300

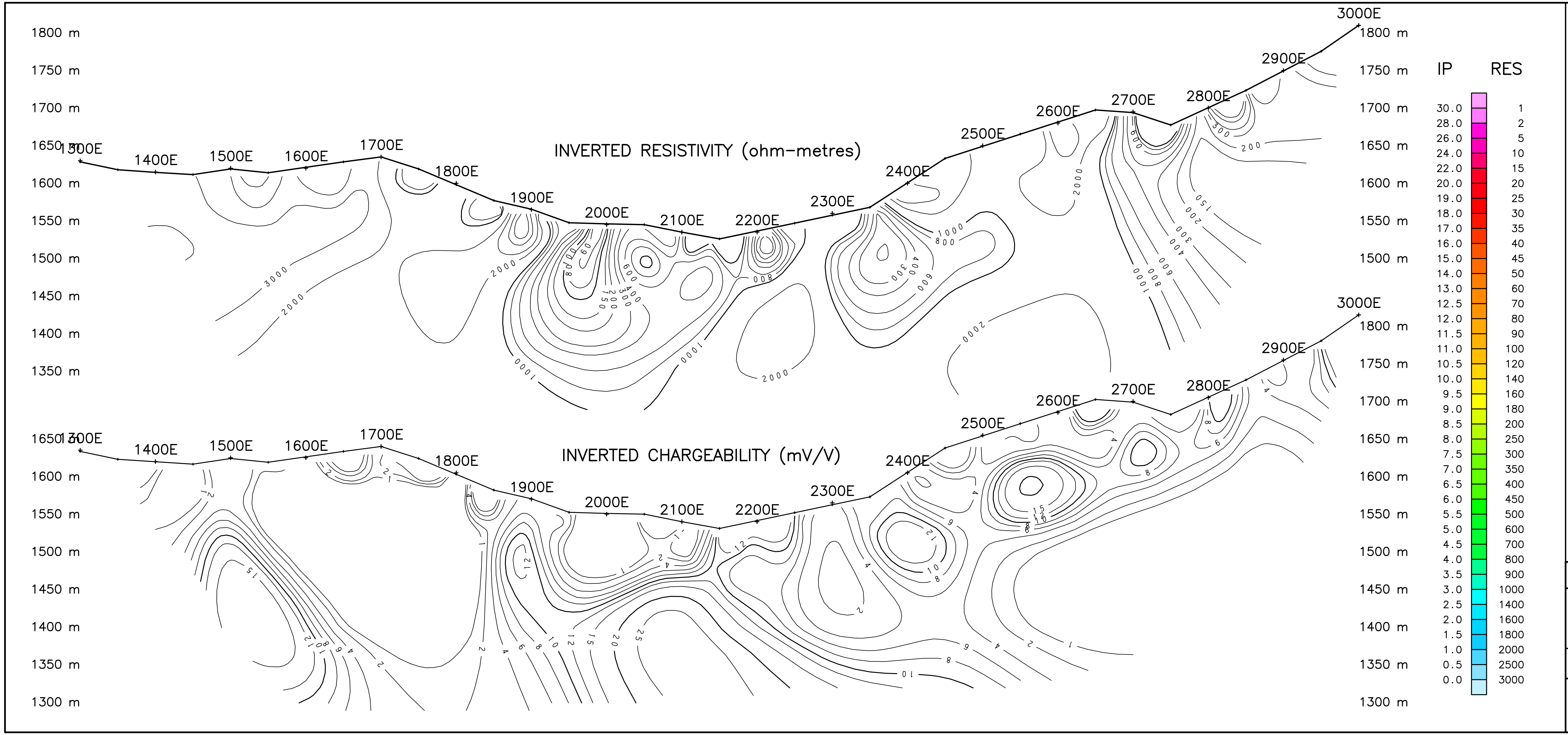
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

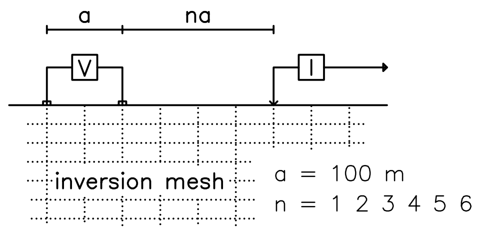
Line 5400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

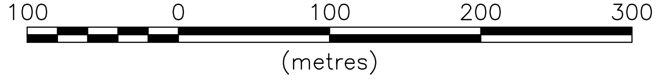
DIPOLE–POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII–3600
1s +on, 1s off, 1s –on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows – 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

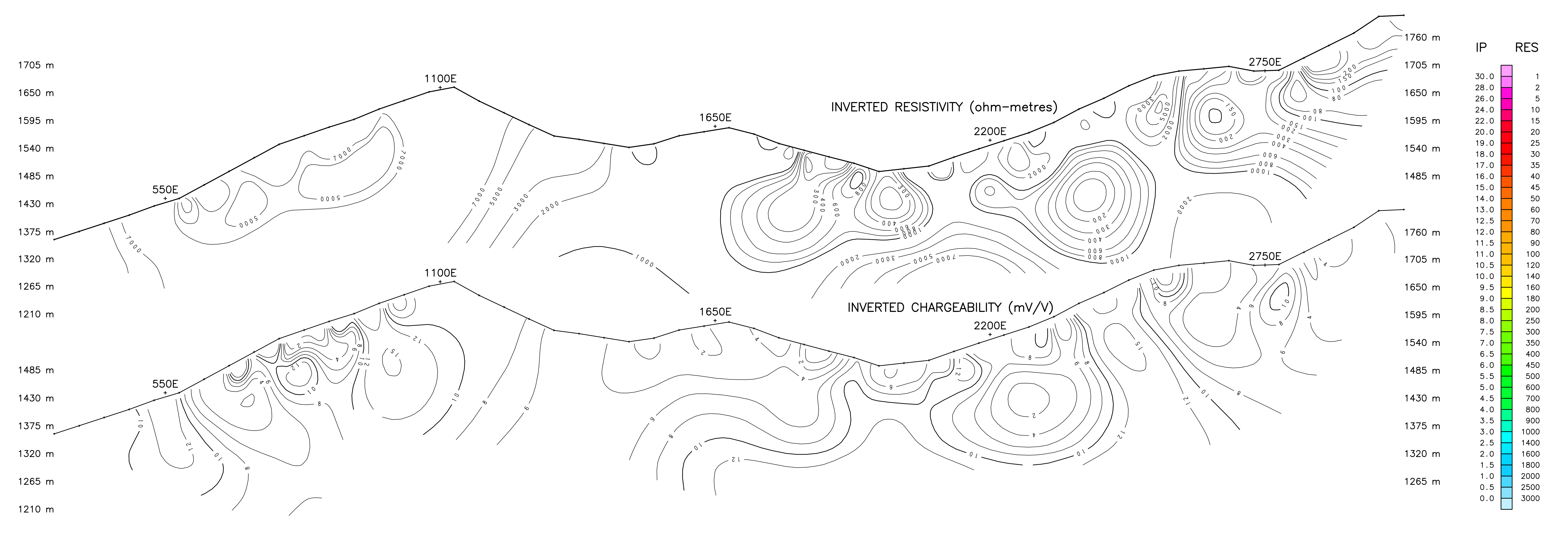


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

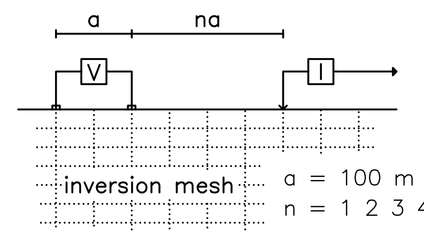
Line 4000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

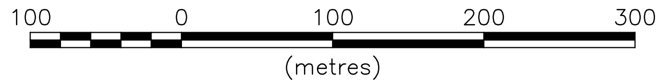
DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

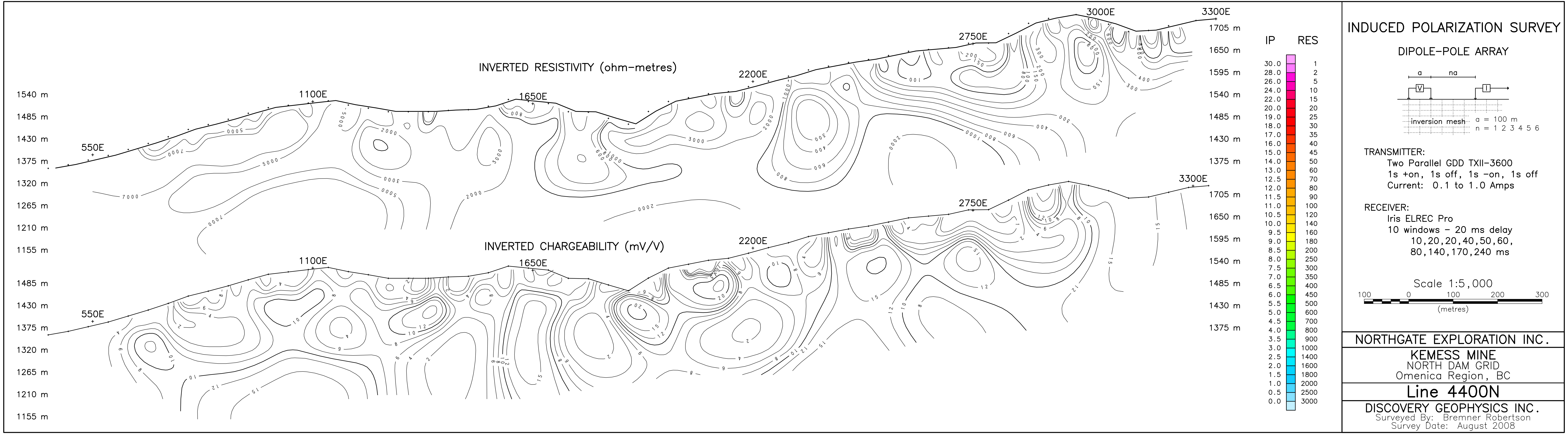


NORTHGATE EXPLORATION INC.

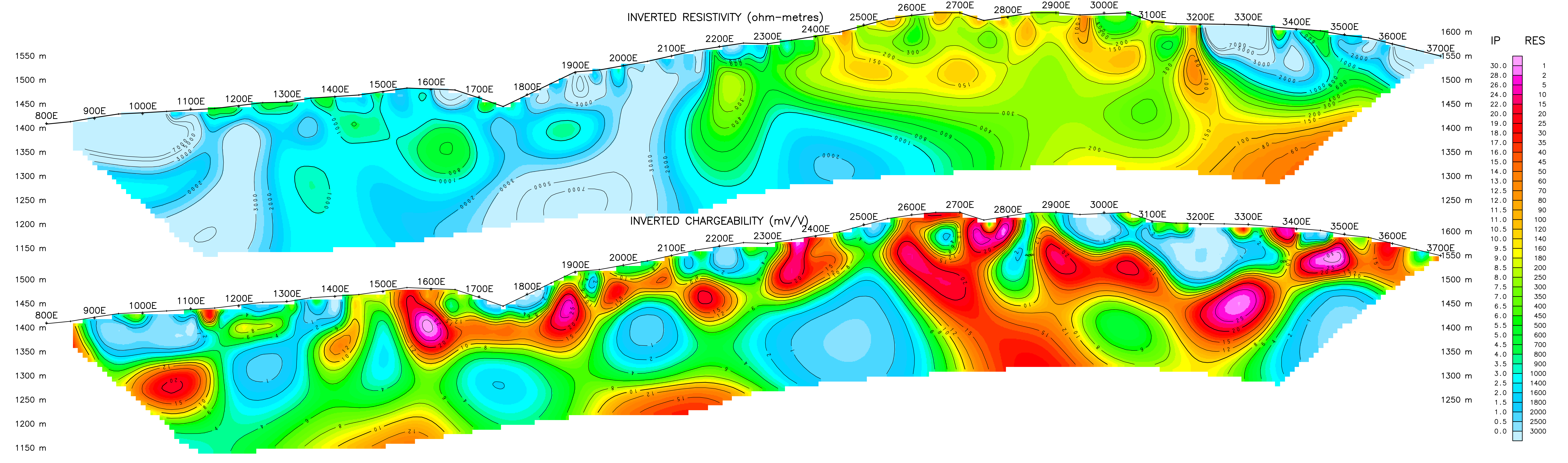
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 4200N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INVERTED RESISTIVITY (ohm-metres)
INVERTED CHARGEABILITY (mV/V)
550E
1100E
1650E
2200E
2750E
3000E
3300E
1705 m
1650 m
1595 m
1540 m
1485 m
1430 m
1375 m
1320 m
1265 m
1210 m
1155 m
IP
RES
30.0 1
28.0 2
26.0 5
24.0 10
22.0 15
20.0 20
19.0 25
18.0 30
17.0 35
16.0 40
15.0 45
14.0 50
13.0 60
12.5 70
12.0 80
11.5 90
11.0 100
10.5 120
10.0 140
9.5 160
9.0 180
8.5 200
8.0 250
7.5 300
7.0 350
6.5 400
6.0 450
5.5 500
5.0 600
4.5 700
4.0 800
3.5 900
3.0 1000
2.5 1400
2.0 1600
1.5 1800
1.0 2000
0.5 2500
0.0 3000
INDUCED POLARIZATION SURVEY
DIPOLE-POLE ARRAY
a
na
V
I
inversion mesh
a = 100 m
n = 1 2 3 4 5 6
TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps
RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms
Scale 1:5,000
100 0 100 200 300
(metres)
NORTHGATE EXPLORATION INC.
KEMESS MINE
NORTH DAM GRID
Omenica Region, BC
Line 4400N
DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE–POLE ARRAY

a na
V I
inversion mesh
a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII–3600
1s +on, 1s off, 1s –on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows – 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

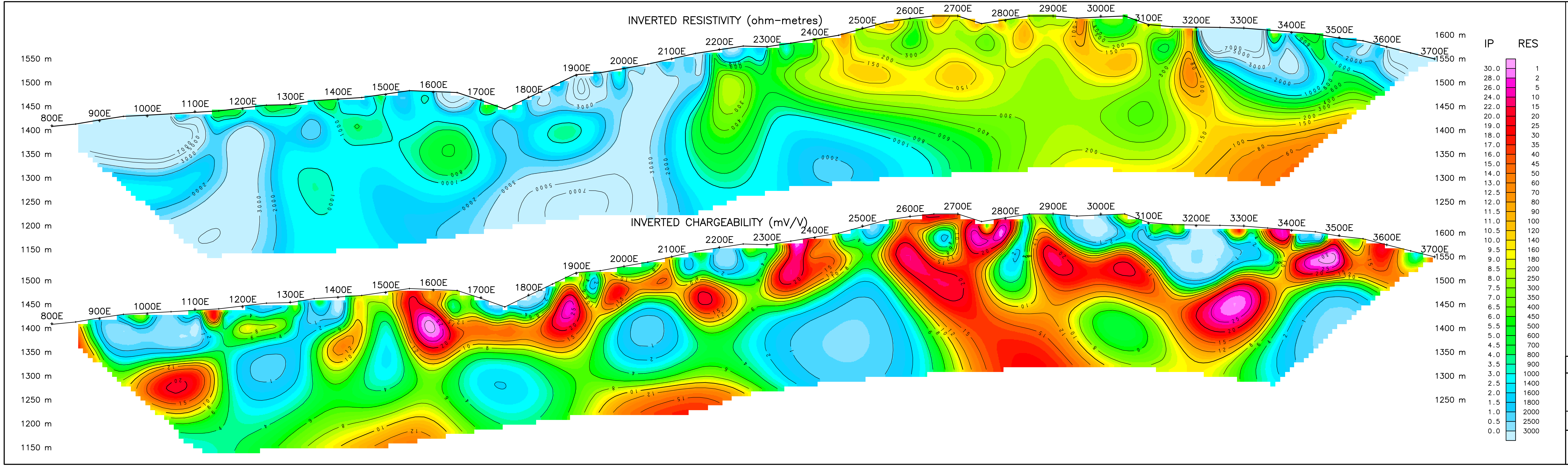
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

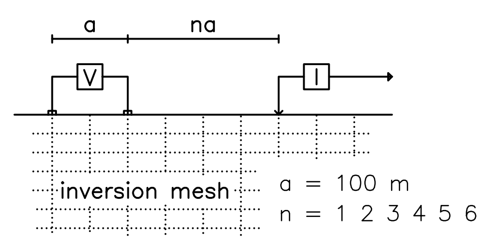
Line 4600N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE–POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII–3600
1s +on, 1s off, 1s –on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows – 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

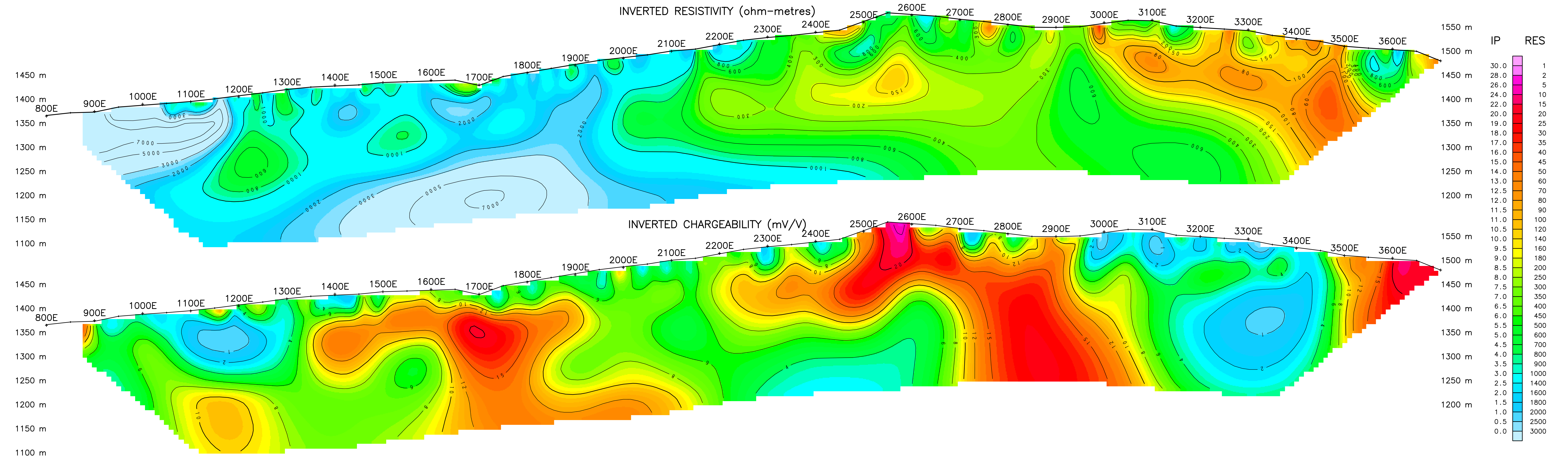
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

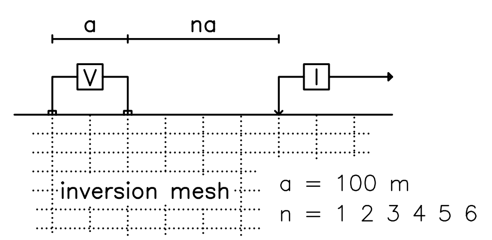
Line 4600N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

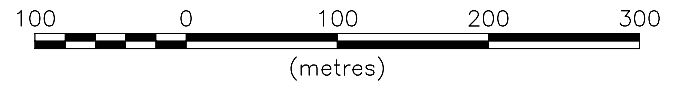
DIPOLE-POLE ARRAY



TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

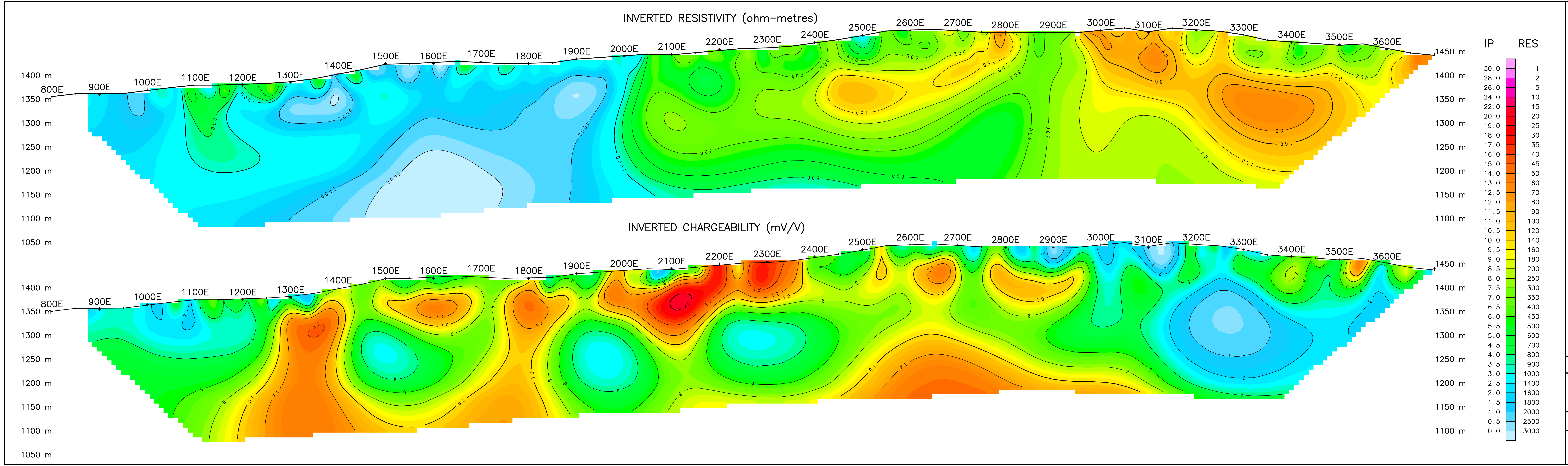


NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 4800N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

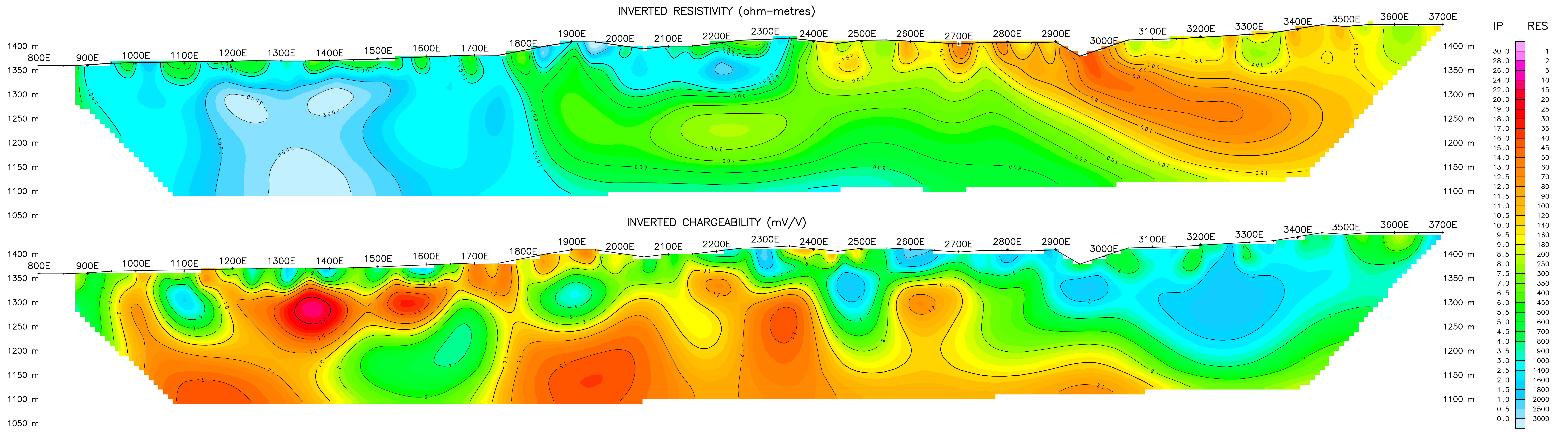
100 0 100 200 300
(metres)

NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 5000N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008



INDUCED POLARIZATION SURVEY

DIPOLE-POLE ARRAY

a na

inversion mesh

a = 100 m
n = 1 2 3 4 5 6

TRANSMITTER:
Two Parallel GDD TXII-3600
1s +on, 1s off, 1s -on, 1s off
Current: 0.1 to 1.0 Amps

RECEIVER:
Iris ELREC Pro
10 windows - 20 ms delay
10,20,20,40,50,60,
80,140,170,240 ms

Scale 1:5,000

100 0 100 200 300
(metres)

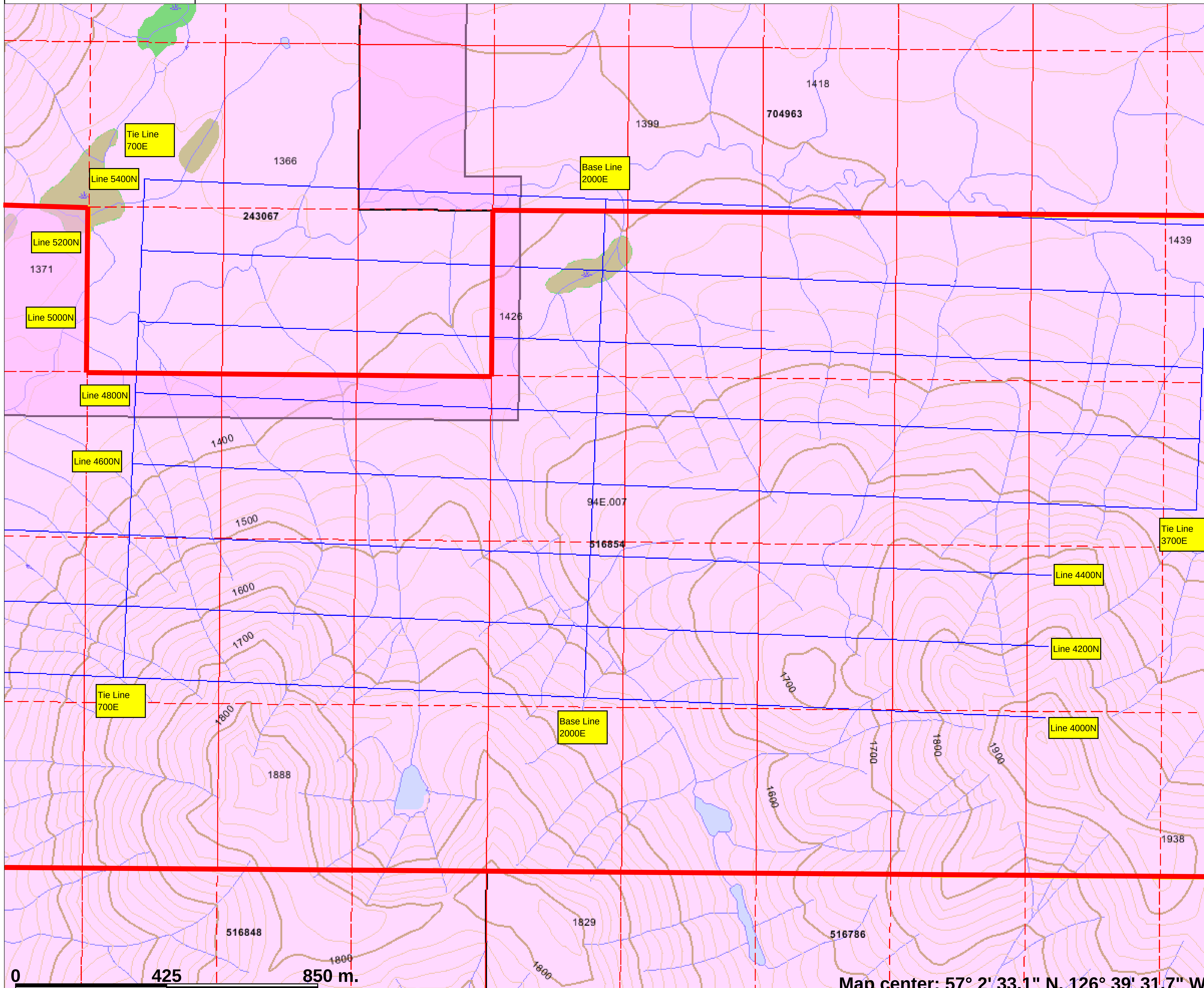
NORTHGATE EXPLORATION INC.

KEMESS MINE
NORTH DAM GRID
Omenica Region, BC

Line 5400N

DISCOVERY GEOPHYSICS INC.
Surveyed By: Bremner Robertson
Survey Date: August 2008

North Dam Grid Area



Legend

- Indian Reserves
- National Parks
- Conservancy Areas
- Parks
- MTO Grid (MTO)
  - Blocked by MEM
  - Other
- Mineral Tenure (current)
  - Mineral Claim
  - Mineral Lease
- Mineral Reserves (current)
  - Placer Claim Designation
  - Placer Lease Designation
  - No Staking Reserve
  - Conditional Reserve
  - Release Required Reserve
  - Surface Restriction
  - Recreation Area
  - Others
- Integrated Cadastral Fabric
- Survey Parcels
- BCGS Grid
- Contours (TRIM)
  - Contour - Index
  - Contour - Index.Indefinite
  - Contour - Index.Depression
  - Contour - Index.Depression Indefinite
  - Contour - Intermediate
  - Contour - Intermediate.Indefinite
  - Contour - Intermediate.Depression
  - Contour - Intermediate.Depression Indefinite
  - Areaof Exclusion
  - Areaof Indefinite Contours
- Annotation (1:20K)
- Transportation - Points (TRIM)
  - Helipad
- Transportation - Lines (TRIM)
  - Airfield
  - Airport
  - Airstrip
  - Airport.Abandoned
  - Ferry Route
  - Road (Gravel Undivided) - 1 Lane
  - Road (Gravel Undivided) - 2 Lanes
  - Road (Gravel Undivided) - U/C - 1 Lane
  - Road (Gravel Undivided) - U/C - 2 Lanes
  - Road (Paved Divided) - Not Elevated - 1 Lane Each Way
  - Road (Paved Divided) - Not Elevated - 2 Lanes Each Way
  - Road (Paved Divided) - U/C - Not Elevated - 2 Lanes Each Way
  - Road (Paved Undivided) Not Elevated - 3 Lanes
  - Road (Paved Undivided) - Not Elevated - 1 Lane

N

Scale: 1:7,998

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: Northgate Minerals Corp
2008 Assessment Report

Analytical Certificate - Rock Samples

Kemess Mine

Exploration Sample Assay Report

Analysis Date: 4-Aug-08 Assayer: cj/sl

	Sample #	Sample Identification	Copper (%)	Gold (gmt)	Iron (%)	Sulphur (%)	Carbon (%)	Insol (%)
1	115151		0.024	0.29	2.25	1.24	0.02	
2	115152		0.003	0.02	3.32	0.73	0.10	
3	115153		0.007	0.01	6.31	0.11	0.29	
4	115154		0.542	0.02	1.92	0.05	2.11	
5	115155		0.056	0.01	33.79	0.68	0.17	
6	115156		0.012	0.01	5.32	0.05	0.05	
7	115157		0.015	0.02	3.00	0.08	2.58	
8	115158		0.040	0.02	15.30	7.85	0.08	
9	115159		0.016	0.02	7.42	2.35	0.05	
10	115160		0.023	0.02	6.39	2.68	0.03	
11	115161		0.026	0.02	1.83	1.12	0.06	
12	115162		0.038	0.01	21.47	1.63	0.09	
13	115163		0.004	0.01	4.60	0.26	0.57	
14	115164		1.283	0.03	5.89	1.65	2.11	
15	115165		0.008	1.07	0.90	0.27	0.12	
16	138993		0.001	0.02	1.68	0.43	0.09	
17	138994		0.159	0.08	37.98	25.40	0.05	
18	138995		0.003	0.02	1.11	0.12	9.81	
19	138996		0.010	0.02	6.34	0.15	0.09	
20	138997		0.016	0.02	1.66	0.55	0.03	
21	138998		0.003	0.02	4.20	2.39	0.09	
22	138999		0.001	0.03	4.79	0.70	0.20	
23	139000		0.025	0.02	5.76	0.72	0.00	
24	115160	Duplicate	0.024	0.02	6.46			
25								
26								
27								
28								
29								
30								
31								
32								

William S Smith
BC REGISTERED ASSAYER

080804exploration1.xls