Report on the 2012 Geological, Geophysical and Geochemical Exploration Work on the Rivier Property

Watson Lake Mining District, Yukon Territory
NTS Sheets 105G/06 and 105G/11
61° 29' N 131° 10' W

Claims:
Rivier 1 (YD58798)
Rivier 2-18 (YD58799 – YD58815)
Rivier 19-22 (YD61450 – YD61453)
Rivier 23-40 (YD58820 – YD58837)
Rivier 41-44 (YD61454 – YD61457)
Rivier 45-62 (YD58842 – YD58859)
Rivier 63-66 (YD61458 – YD61461)
Rivier 67-112 (YD58864 – YD58909)
Rivier 113-116 (YD61462 – YD61465)

Property Owner: Voyager Gold Corp.
650-200 Burrard Street
Vancouver, BC
V6C 3N5

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Whitehorse, Yukon
Y1A 0C9

September 2, 2013

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SUMMARY

The Rivier Property consists of 116 quartz claims covering 2,404 hectares, located in the Watson Lake Mining District 87 kilometers southeast of Ross River, Yukon. Voyager Gold Corp. has an option to acquire a 60% interest in the Property from Rackla Metals Inc. The Property is a gold target. The purpose of this report is to describe the work carried out on August 25th, 2012 which was designed to evaluate the significance of gold in soil anomalies detected in 2010 and 2011. Results of a study of the aeromagnetic survey are also included in this report.

The Finlayson Lake regional geology map shows that the Rivier Property covers a slab of allochtonous Slide Mountain Terrane that was accreted onto the margins of Ancestral North America in Mesozoic time, and then displaced by the regional-scale Cretaceous/Tertiary Tintina Fault. This slab of Slide Mountain Terrane consists of a three square kilometer ultramafic body of serpentinite and listwanite lying unconformably on rocks of the schistose Nasina assemblage of the Yukon Tanana Terrane (YTT). Cretaceous intrusions occur throughout the YTT.

In 2011 Voyager Gold in 2011 carried out a 472 line kilometer airborne magnetic and radiomagnetic geophysical survey. Between 2010 and 2011 a total of 856 soil samples plus stream sediment and rock samples have been collected from the property. Only reconnaissance geological mapping has been carried out to date.

Geochemical results from the soil sample programs have identified anomalous results for gold-silver-arsenic-antimony at three zones, named the North, South and West Zones, over and on the margins of the listwanite. The listwanite and geochemical anomalies flank a prominent magnetic high over the serpentinized ultramafic. The exploration target is a listwanite-associated lode gold mineralization of the Motherlode type. Pathfinder elements match the signature for this type of deposit.

Each of the three zones contains a >2000 ppb gold in soil anomaly, these sample sites served as the focus of exploration in 2012 which consisted of; to confirm the gold anomalies, to locate the source of the gold in bedrock and to design future exploration programs.

At the North Zone the source of the gold in soil anomaly is thought to be a fault zone contact between graphitic schist and listwanite. The bedrock source of the gold in soil anomalies at the South and West Zone remains unexplained although both areas overlie scree slopes of blocky listwanite. As the ultramafic – listwanite body is thought to be a thrust slice, the source of the gold in soil anomaly could be fault controlled and extend beneath the ultramafic – listwanite body.

The aeromagnetic data shows a very strong and distinctive aeromagnetic high closely coincident with the serpentinite phase of the ultramafic body, and a surrounding strong magnetic low defines its contact with the listwanite alteration assemblage. A review of the aeromagnetic data completed by in3D Geoscience Inc. concluded that the ultramafic body is likely depth limited implying that the ultramafic - listwanite body is indeed a thrust slice.

The early stage exploration carried out to date has identified a significant gold in soil anomaly and further work is warranted to evaluate this target. Further exploration, including detailed geological mapping and additional soil geochemistry, is recommended with a focus on the anomalous areas identified to date, especially outboard of the margins of the magnetic high anomaly. Although the three sites examined in 2012 were not conducive to hand trenching or trenching by heli-portable equipment due to steep slopes and blocky scree slopes, this exploration technique should be kept in mind for other prospective areas. Lastly, all work should be directed towards identifying diamond drill targets.

INTRODUCTION

This report was prepared for Voyager Gold Corp. ("Voyager"). Its purpose is to satisfy assessment requirements of the Yukon *Quartz Mining Act* through a description of exploration work carried out to April 22, 2013 and an assessment of the exploration potential of the Rivier Property. Work was carried out on August 25th 2012 and was directed towards evaluating the significance of the gold in soil anomalies identified in 2011.

The Rivier Property is located in southeastern Yukon Territory (Figure 1). Exploration work carried out on the Property in 2012 consisted of verifying the geology map used during the 2010 and 2011 field programs, checking and confirming the geochemical soil anomalies generated in 2010 and 2011, and investigating the feasibility of future trenching and other exploration programs. A study and interpretation of the airborne magnetic survey completed in 2011 was carried out by Mr. Todd Ballantyne, P.Geo., with in3D Geoscience Inc. Work programs completed to date had the overall objective of identifying potential bedrock gold mineralization.

Background information used in this report was taken from reports on the property by Mac Gearailt (2010) and McKnight & Keyser (2012) that describe exploration work carried out on the property in 2010 and 2011 respectively.

PROPERTY DESCRIPTION AND LOCATION

The Rivier Property is situated 87 kilometers southeast of Ross River in southeastern Yukon Territory on NTS map sheet 105G/06 and 105G/11, and is centered at 61° 29'N and 131° 10'W (UTM coordinates 384000E 6819000N; NAD 83, Zone 9N) about 12 kilometers northeast of the Tintina Trench (Figure 2). The 116 claims total an area of 2,404 hectares which were staked under the Yukon Quartz Mining Act and are registered in the Watson Lake Mining District.

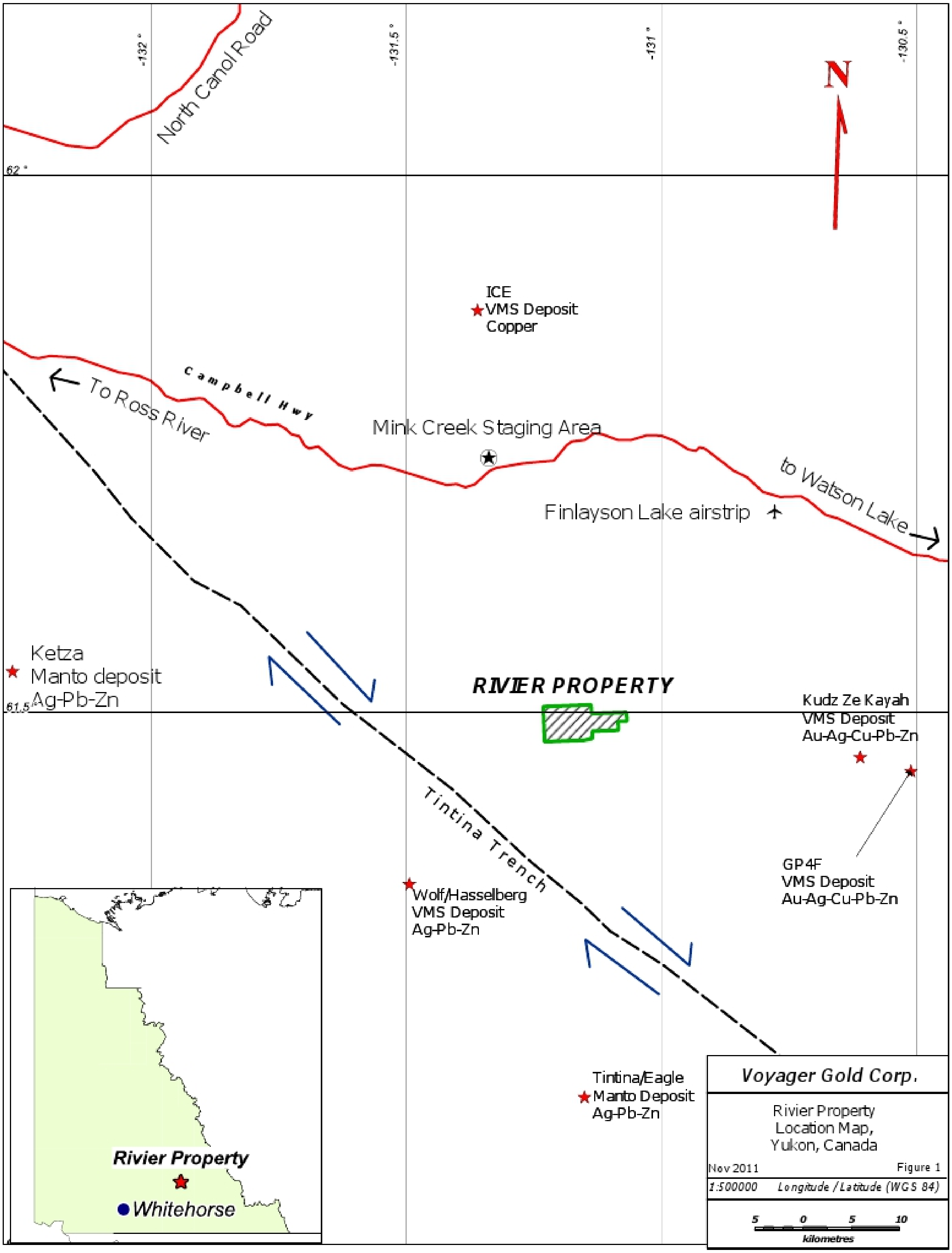
Table 1. *Rivier Property Claims.*

Claim Name	Grant Number	Registered Owner	Expiry Date*
Rivier 1	YD58798	Rackla Metals Inc.	Apr 22/2016
Rivier 2-18	YD58799 – YD58815	Roger W. Hulstein	Apr 22/2016
Rivier 19-22	YD61450 – YD61453	Rackla Metals Inc.	Apr 22/2016
Rivier 23-40	YD58820 – YD58837	Roger W. Hulstein	Apr 22/2016
Rivier 41-44	YD61454 – YD61457	Rackla Metals Inc.	Apr 22/2016
Rivier 45-62	YD58842 – YD58859	Roger W. Hulstein	Apr 22/2016
Rivier 63-66	YD61458 – YD61461	Rackla Metals Inc.	Apr 22/2016
Rivier 67-112	YD58864 – YD58909	Roger W. Hulstein	Apr 22/2016
Rivier 113-116	YD61462 – YD61465	Rackla Metals Inc.	Apr 22/2016

*subject to acceptance of work described in this report.

On April 22, 2010, Roger Hulstein ("Hulstein") staked 100 of the claims (the "Hulstein Claims") comprising the Rivier Property. In accordance with an Agreement between Radius Gold Inc. ("Radius") and Hulstein dated July 18, 2010, Radius was granted the option (the "Hulstein Option") to earn a 100 % interest in the Hulstein claims. On September 10, 2010, Radius acquired the other 16 Rivier claims by staking.

FIGURE 1: Rivier Property Location Map



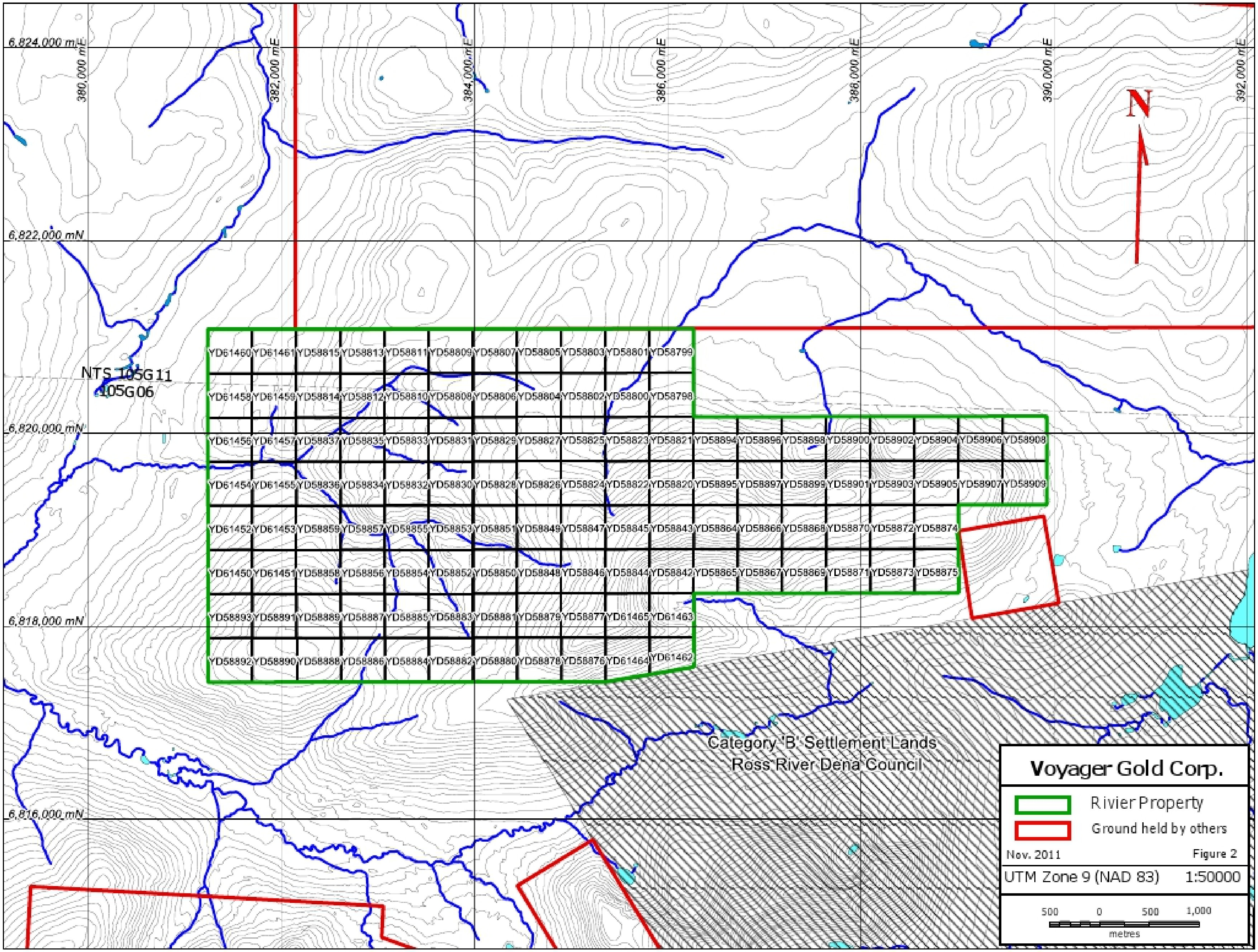


FIGURE 2: Rivier Property claims map, Watson Lake Mining District. Modified from Yukon Mining Recorder shapefile data at ftp://ftp.geomaticsyukon.ca/Mining/

As part of an asset spinout transaction, Radius assigned (the “Assignment”) all of its rights and obligations under the Hulstein Option to Rackla Metals Inc. (“Rackla”). Voyager and Radius agreed to the Assignment to Rackla Metals Inc. on October 13, 2011.

In accordance with an option agreement between Voyager Gold Corp. and Radius Gold Inc. dated September 1, 2011, and the Assignment, Voyager Gold Corp. has the exclusive right and option to acquire a 60% interest in the Rivier Property by paying cash and issuing Voyager shares to Rackla and completing exploration work on the Property.

Assuming Voyager has completed its cash and share payments and exploration expenditures, Voyager and Rackla will enter into a 60/40 joint venture to further explore and develop the Property.

Mineral claims within the Yukon Territory are covered by the *Quartz Mining Act* and are physically staked by placing two claim posts at each end of the location line for the claim. Mineral claims cannot measure more than 1500 feet by 1500 feet (457.2 x 457.2 meters) and are valid for one year from the date of staking. Assessment work such as geological mapping, geochemical or geophysical surveys, trenching or diamond drilling, must be completed each year to maintain title, or alternatively cash in lieu of assessment may be paid to the mining recorder. A minimum annual work commitment of $100 per claim is required to keep claims in good standing. Expenditures exceeding the minimum requirements can be credited to future years and adjoining claims can be grouped together (to a maximum of 750 mineral claims) so that work done on one claim may be filed onto adjoining ground.

The *Quartz Mining Land Use Regulations* classify exploration activities based on increased potential for adverse environmental impact. No notification, assessment, or permit approval is required for Class 1 operations, which covers grassroots-type exploration. The work programs carried out meet MLUR class I thresholds and therefore did not require a Permit. Potential mine development on the property will require a Yukon Mining Licence and Lease issued by the Yukon Territorial Government. There are no other impediments to the Company’s surface rights of the Property.

There are no known environmental liabilities on the Property and no formally designated parks or special management zones within the Property.

ACCESS, CLIMATE, INFRASTRUCTURE, AND PHYSIOGRAPHY

The Rivier property is located 87 kilometers southeast of Ross River and 225 kilometers east of Whitehorse. Access to the property is most conveniently provided by helicopter. The closest staging areas available are located along the Robert Campbell highway at Mink Creek approximately 30 kilometers north of the property, and alternatively from the nearby Finlayson Lake airstrip, 31 km to the northeast. A tote road extends from the Campbell Highway to the south and west of the property. The 2010 exploration team noted the presence of hunters on ATVs, indicating the road is usable (MacGearailt, 2010).

From Whitehorse (population 26,000) there is daily jet airplane service to Vancouver, British Columbia and other points south. Whitehorse is a major center of supplies, communications and has a source of skilled labour for exploration diamond drilling, construction and mining operations. Basic services including room and board, fuel, communications and helicopter services are available at Ross River (population 337 in 2001).

There are no facilities on the Rivier Property. Portable electrical generators provide sufficient power for exploration stage programs and the creeks in the area provide sufficient water for camp and diamond drilling requirements on the Property. The Property provides sufficient area for potential future mine infrastructure such as tailings storage, waste disposal sites, heap leach pads and processing plant facilities.

Regional topography is typical of a glaciated area with wide valleys and steep hillsides. The Rivier Property lies adjacent to the Pelly Mountains of the northern Cordillera, and drainage is into the Yukon River via the Pelly River. The topography of the area covered by the Rivier claims is a broad, gently dipping plateau with sharp descents into narrow valleys carved by first and second order streams. Steep hillsides ascending to regional topographic highs occur on the east side of the Property. Elevations on the Rivier Property range from 1,300 meters asl at valley bottoms to 2,000 meters asl at the top of the highest peak, with much of the Property above the approximately 1,500 m tree line. Permafrost is present on north-facing slopes.

Climate in the claim area is typical of highlands in the Yukon, characterized by low precipitation and a wide temperature range featuring a long cold winter (temperatures of -30^{o}C to -45^{o}C are common) and short summers with daily highs of 10^{o}C to 25^{o}C. The seasonal window for prospecting and exploration is from late May to late September.

Outcrop is plentiful on high ridges, and locally abundant on steep slopes and cliff sides. Locally derived bedrock float is abundant in areas with little to no vegetation. The peaks in the center of the property are barren. Vegetation ranges from to moss and grass along the higher elevations of the plateau, to willow, dwarf birch and conifers along valley bottoms, southern facing slopes and lower elevations of the plateau.

HISTORY

The mid-Paleozoic volcanic rocks of the Yukon-Tanana Terrane in the Finlayson Lake district have long been explored by numerous companies for the possibility of volcanogenic massive sulphide (VMS) deposits. Several VMS discoveries were made in the area in the 1990s including the Kudz ze Kayah deposit by Cominco in 1994, the Wolverine deposit by Westmin Resources Ltd. and Atna Resources Ltd. in 1995, the Ice deposit by Yukon Zinc Corporation in 1996, and the GP4F deposit by Cominco Ltd. in 1998. Both the age range and host rocks for the deposits are diverse within the Terrane (Murphy et. al., 2006).

The area around the claim blocks has a recorded history of exploration extending to the 1950's when increased access and interest was gained with the discovery of the Vangorda Creek deposit (Sevensma & Heard, 1967). A 1966 assessment report for Northlake Mines Ltd. mentions the presence of several old cabins and placer workings in the area that were likely a product of placer miners at the turn of the 20th century (Sevensma & Heard, 1966).

Aside from Northlake Mines Ltd., a number of other companies and individuals have explored the general area over the last half of the 20th century including Newmont Exploration Ltd., Pelly River Exploration, Chevron Resources Ltd., Hudson Mining and Smelting Company Limited, Riviera Mines Ltd., Empire Metals Corporation Ltd., and Welcome North Mines Ltd. Since the discovery of the VMS deposits in the vicinity, companies that have explored the area include Expatriate Resources Ltd., Cominco, Pacific Bay Minerals, True North Gems and Arcturus Ventures Inc.

Aurora Geosciences Ltd. completed a reconnaissance exploration program on the Rivier Property in 2010 for Radius Gold Inc., and more detailed follow-up geochemistry was conducted in 2011 by Voyager Gold Corp. over an anomalous area identified in 2010.

Apart from the 2010 and 2011 programs which were executed on behalf of Radius Gold Inc. and Voyager respectively, four assessment reports (Potter, 1988, MacRobbie, 1995, Burgert, 1997, and Moyle & Wesa, 1998) cover historic claim blocks that are now covered by the current Rivier claims.

The assessment report by Potter (1988) for Welcome North Mines describes an exploration program including rock and soil sampling that indicated low grade pervasive gold associated with strong As anomalies over listwanite. More work was recommended but the claims were allowed to lapse (Potter, 1988).

The program by Welcome North Mines Ltd. consisted of extensive soil sampling over and around the ultramafic body in 1988 in which 1,068 B-horizon and talus soil samples were collected along with 82 rock samples (Potter, 1988). Two anomalous zones were identified that were coincident with the ultramafic body and were labeled North zone and South zone. Hand trenching was also done. Samples were collected in two stages. Stage 1 identified the anomalous zones, had a line spacing of 300 metres and sample spacing of 50 metres on lines laid out by compass and hip-chain at a mine grid orientation of 030°. Stage 2 had 100 metre line spacings and 20 metre sample spacings, and focused on the anomalous zones outlined by stage 1. Gold values ranging from below detection to 5,300 ppb and arsenic values ranging from 10 ppm to 23,000 ppm were obtained.

MacRobbie reported (1995) work done on the INK claim block, staked to cover a geophysical target identified by Cominco in 1994. The claims occupied a portion of the northeast corner of the current property. 40 soil samples and one silt sample were found to have no favourable indications of mineralization and no further work was recommended. This report also mentioned the staking of Minfile 105G 022 as the OUR claims by D. Thrasher in 1969, for which no assessment work was filed (MacRobbie, 1995). Moyle & Wesa reported (1998) exploration by Pacific Bay Minerals Ltd. on the INK claims that followed up the work done there by Cominco. No further work was recommended and the claims lapsed (Moyle and Wesa, 1998).

Burgert reported (1997) a 1996 mapping, prospecting and geochemistry program undertaken over the east extension of the current claims by Expatriate Resources Ltd. The exploration was focused on massive sulfides in a geographic area that corresponds to the eastern part of the current Rivier Property. A total of 78 samples were collected over 100 metre spacings on claim lines and two contour lines. Approximate sample locations were obtained by georeferencing a map from the assessment report (Burgert, 1997). No noteworthy anomalies were obtained; however, Expatriate did not analyze their samples for gold. The claims were allowed to lapse (Burgert, 1997).

Exploration by Aurora Geosciences on behalf of Radius Gold Inc. in 2010 included a 10-day reconnaissance geochemistry program. 267 soil samples spaced at roughly 200 metres, 37 silt samples and 22 rock samples were collected primarily on ridges, spurs and streams, with rock samples being focused primarily on exploration of the ultramafic body. Anomalous Gold-silver-arsenic-antimony and nickel was found in and around the ultramafic body, with anomalous values extending to the south of the geologic unit. Values ranged from detection limits to 427 ppb gold, 8,042 ppb silver, 3,390.5 ppm arsenic, and 124.6 ppm antimony were acquired (MacGearailt, 2010).

Voyager Gold Corp. expanded on geochemical reconnaissance work done in the 2010 program. The field work was supervised by Chris McKnight, GIT, under the supervision of Harmen Keyser, P.Geol. Mr. McKnight and a team of four soil samplers contracted through Casselman Geological Services Ltd. in Whitehorse collected 587 soil samples, six silt samples and 20 rock samples in September 2011. Results show that there is a strong gold in soil anomaly associated with the margin of the ultramafic body. Three areas, each with a >2000 ppb gold in soil anomaly, were recognized and named; the North, South and West Zones. Work in 2012 was directed at evaluating the soil anomalies at these three zones.

There are no historical mineral resources and mineral estimates reported on the Rivier Property itself, and no records of previous mineral production.

GEOLOGICAL SETTING AND MINERALIZATION

Regional Geology

The Rivier Property lies in the Yukon Tanana Terrane (YTT) underlain by units of the Nasina assemblage (Colpron et al, 2006). This assemblage represents a Late Devonian to Early Mississippian arc/back-arc paleo-environment within the YTT of the Canadian Cordillera. The project area is located 10-15 kilometers from the regional, NW/SE trending dextral strike-slip Tintina fault that offsets the rocks of the Finlayson Lake district approximately 450 kilometers southeast of comparable lithologies near Dawson City and the Klondike gold district. The Tintina fault is thus the southwest boundary of the YTT in this region. Figure 3 exhibits the relative locations of the Klondike District hosting a number of recently discovered gold deposits and Finlayson Lake District that hosts the Rivier Property.

Colpron (2006) identified the rocks of YTT as pericratonic in origin and are structurally complex. They currently occupy an intermediate position between continental margin rocks of Ancestral North America and terranes that were accreted in Mesozoic time. Poly-deformed and metamorphosed Paleozoic meta-sedimentary and meta-igneous rocks of the YTT are related to Archean and Proterozoic source regions.

Sheared mafic and ultramafic volcanic and plutonic rocks of the Slide Mountain Terrane (Anvil Assemblage) overlie the pericratonic rocks of YTT and are preserved as klippen. Figure 4 displays the Regional Geology. The allochthonous assemblage has been interpreted as a dismembered ophiolite sequence and is made up of massive greenstone with associated sedimentary rocks, mafic and ultramafic gabbroic rocks and serpentine matrix melange. The age of the assemblage ranges from Late Devonian to Late Pennsylvanian-Early Permian based on fossil dating.

Cretaceous granitoid intrusions are exposed throughout the district and the district hosts important VMS deposits and occurrences (Colpron et al, 2006).

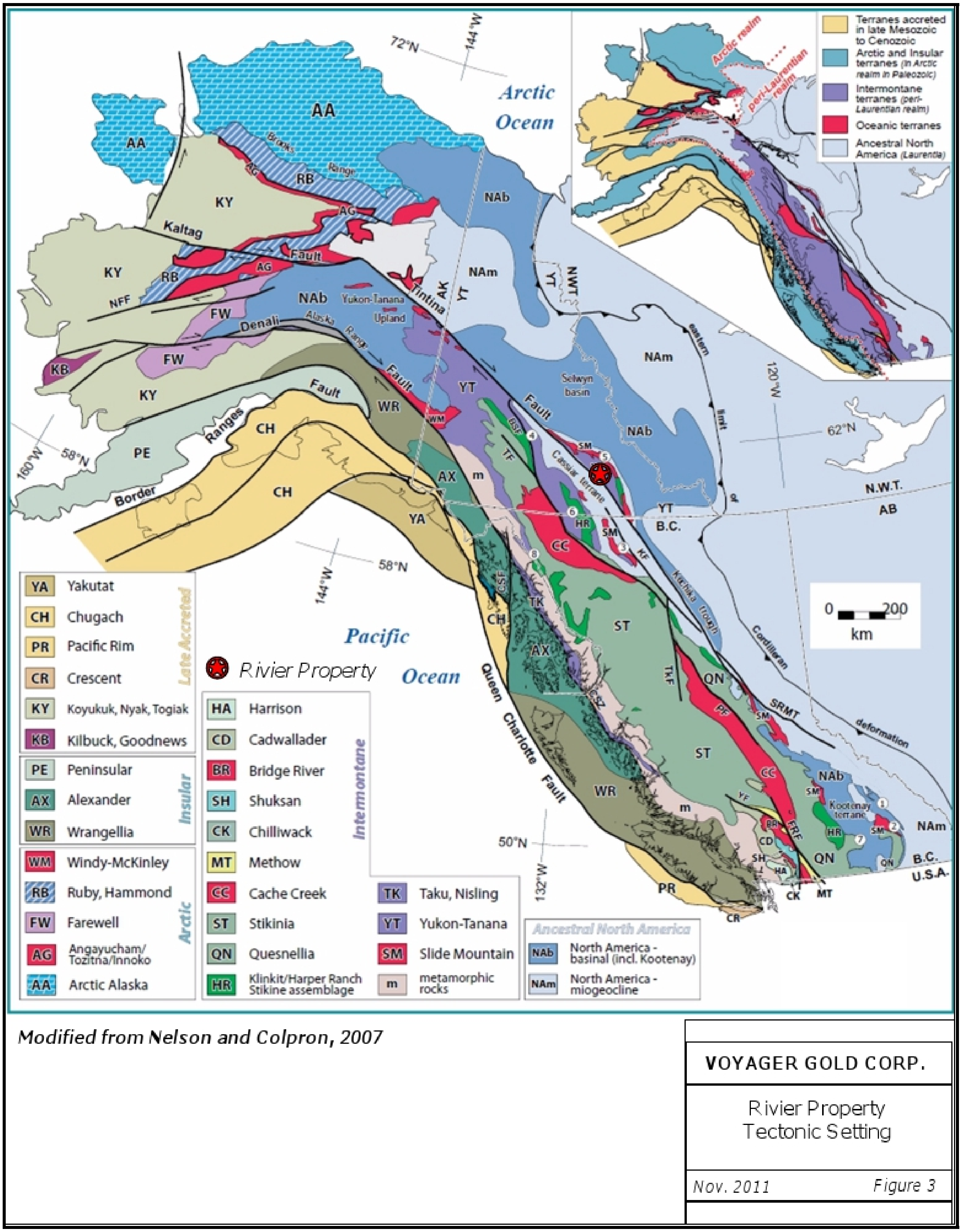


FIGURE 3: Regional tectonic setting

Property Geology

The Rivier Property lies chiefly over various schistose meta-sediments of the Nasina Assemblage, a mostly Devonian unit of the pericratonic YTT, as well as being the oldest rocks on the Property (Figure 4). This assemblage was dextrally displaced along with other lithologies of the YTT by the Tintina Fault, with the larger portion of corresponding Nasina lithology currently located in the Klondike/Dawson area of the Yukon. The Nasina assemblage on the Rivier Property is characterized by micaceous schists that are locally graphitic or chloritic, and is host to at least one generation of quartz veins.

A unit of Slide Mountain Terrane (Anvil Assemblage) altered ultramafic rock occupies the center of the property and unconformably overlies the Nasina assemblage. This ultramafic unit is a displaced, fault-bounded lithological unit from an ophiolitic protolith. Brecciated rocks were found by the 2011 exploration crew, and sampled by the author. Other listwanite occurrences in the Canadian Cordillera have been determined to have originated from a mantle-derived peridotite/harzburgite (Dussell, 1986; Hansen, 2005), or komatiitic (Jutras, 2003) protolith. Skarnification or contact aureoles complicit in the development of intrusive bodies have not been identified on the Property.

The ultramafic unit on the Rivier Property displays listwanite alteration facies similar to those described in other listwanite-associated gold bearing regions of the Canadian Cordillera (Ash and Arksey, 1990; Dussell, 1986; Hansen, 2005; Jutras, 2003). The ultramafic unit is more resistant to weathering than the schist unit and represents a significant percentage of the outcrop on the Property.

Structure on the Property is dominated by at least three trends. Regional-scale depressions visible on topo maps in concordance with bedding measurements denote a high-angled, northwest dipping, northeast/southwest orientation, and a fracture set in the ultramafic unit trends perpendicularly with dips to the northeast. Steeply dipping, east-west trending quartz veining observed within the Nasina assemblage on the Property are potentially related to steep, north dipping, east-west trending embankments that appear to reflect bedding of the relatively poorly exposed Nasina lithology, and thus may provide structural control for emplacement of the veins. Fracture sets may have been important for the alteration of the ultramafics to the listwanite assemblages, and also for structurally-controlled development of lode gold mineralization (Ash and Arksey, 1990).

The Property geology, as currently interpreted, is shown on Figure 5. Geological mapping is required as the outline of the central ultramafic unit does not coincide with the geophysical analysis of aeromagnetics data acquired during the 2011 exploration program. The margin of the listwanite, where it is contact with the Nasina Group siliciclastic metasediments is needs to be accurately located as the gold in soil anomaly appears to be restricted to this margin.

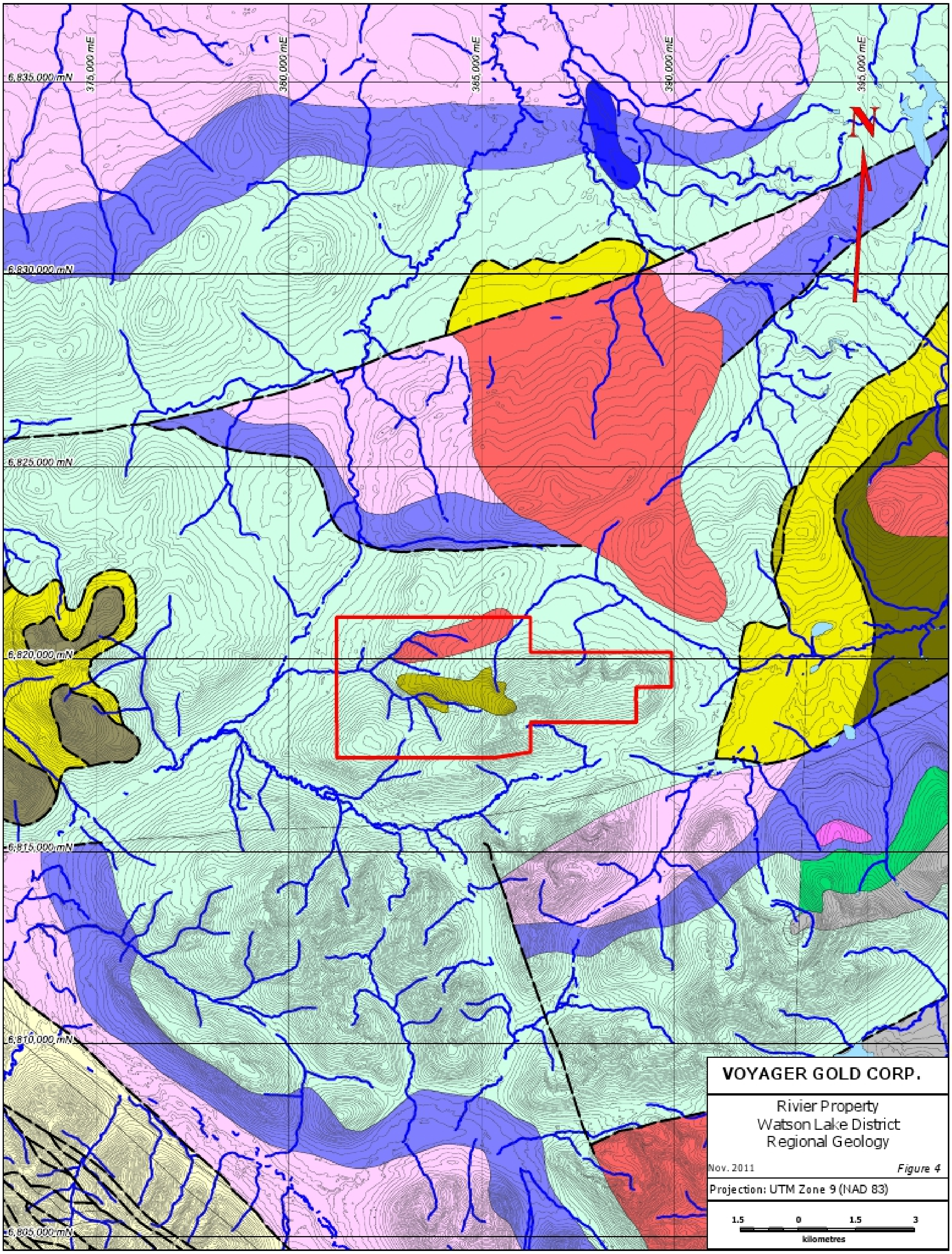


FIGURE 4: Rivier Property regional geology map (modified from Yukon Geological Survey spatial data). Accompanying legend on following page.

Regional Geology of Rivier claims area - Legend to accompany Figure 4

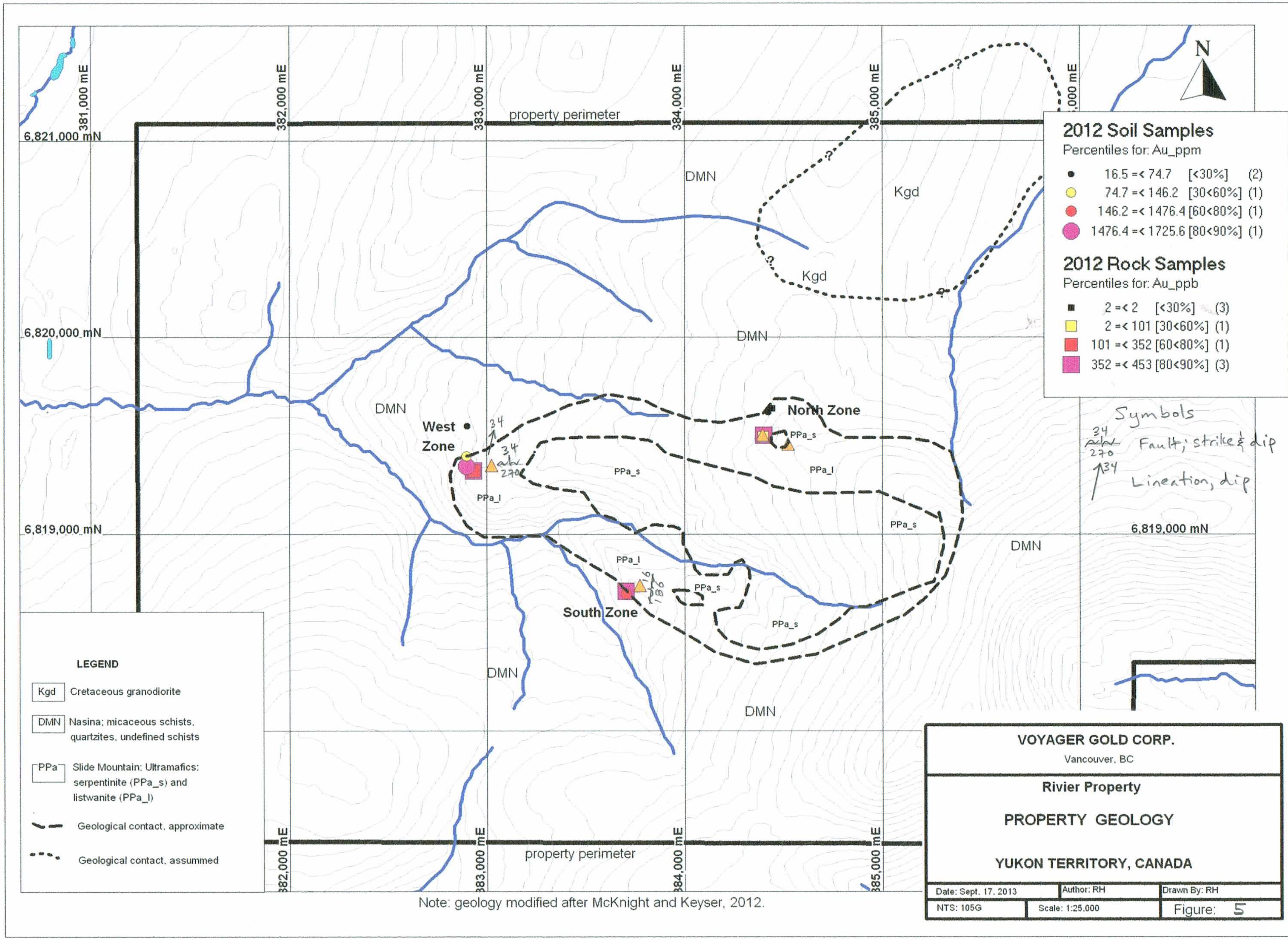
Tertiary	Basalts		Locally amygdaloidal, dark grey-green olivine basalt necks and flows; subaerial and subaqueous (locally pillowed); volcaniclastic rocks; minor olivine gabbro; locally plagioclase-phyric basalt and diabase dykes; minor shale and conglomerate
Cretaceous	Plutonic Intermediate		Resistant, blocky, fine to coarse grained equigranular to porphyritic (K-feldspasr) biotite quartz monzonite and granodiorite and minor quartz diorite; minor leuco-quartz monzonite and syenite (Selwyn Suite)
	Plutonic Felsic		Equigranular to porphyritic (K-feldspar) biotite +/- hornblende +/- muscovite granite, quartz monzonite and granodiorite; porphyritic biotite hornblende granite with large smoky grey quartz phenocrysts and locally K-feldspar phenocrysts (Selwyn Suite)
Carboniferous to Permian	Oceanic Assemblage		
		Mafic volcanics	Variably altered and foliated, locally augite-phyric basalt (local pillows), diorite and gabbro, chloritic greenstone, amphibolitic greenstone and amphibolite; minor metachert, siliceous argillite or siltstone, greywacke, tuff, and siliceous limestone
		Limestone	Light grey to buff weathering, massive fine crystalline, light to dark grey limestone and minor dolomite; light grey, massive, crinoidal limestone; limestone and polymictic conglomerate; sandy limestone, cherty limestone; marble, phyllite, meta-siltstone
		Ultramafics	Dunite, peridotite, gabbro, pyroxenite, harzburgite and minor diorite, hornblendite and diabase; serpentinite, orange-weathering quartz carbonate rock with minor green chromian muscovite, talc-carbonate schist and carbonatized ultramafic rocks
Devonian to Mississippian	Pelly Gneiss suite		Variably deformed granitic rocks
		Pelly Gneiss - Felsic	Resistant, medium grey weathering, porphyritic (pink K-feldspar) biotite quartz monzonite; generally fresh to weakly saussuritized, locally shattered and recemented
	Micaceous and/or graphitic quartzite		Dark grey to black, fine grained graphitic and non-graphitic quartzite, grey micaceous quartzite and quartz muscovite (+/-chlorite; +/- feldspar augen) schist, locally garnetiferous; minor graphitic stretched metaconglomerate and metagrit (Nasina assem.)
			Quartzite, micaceous quartzite, quartz muscovite (+/-chlorite; +/- feldspar augen) schist, and minor metaconglomerate and metagrit as in DMN1, but may locally include significant Nisling Assemblage
			Quartzite, micaceous quartzite, quartz muscovite (+/-chlorite; +/- feldspar augen) schist, and minor metaconglomerate and metagrit as in DMN1, but may locally include significant Klondike Schist Assemblage
Cambrian to Devonian	Cassiar terrane		Various accreted lithologies of the Cassiar terrane, southwest of Tintina fault zone
Proterozoic and Early Paleozoic	Amphibolite		Calcareous actinolite-plagioclase-chlorite-biotite schist, plagioclase-actinolite-chlorite schist, and lesser carbonaceous phyllite and quartzite; metamorphosed ultramafic rocks including dunite and pyroxenite, locally serpentinized
	Schist		Calcareous quartz psammite, marble, calcareous chlorite-biotite schist and calcsilicate; calcareous garnet-biotite-muscovite schist, rare amphibolite; biotite-quartz-muscovite schist and lesser quartz-feldspar-muscovite augen schist (assignment uncertain, could belong to DMN (Nasina))

Faulting

Scale - 1:125000

Note - Contour intervals based on NTS maps are 100 ft on the north half of the map, and 20m in the south half.

Lithological information from http://www.geology.gov.yk.ca/


N
381,000 mE
382,000 mE
383,000 mE
384,000 mE
385,000 mE
6,821,000 mN
6,820,000 mN
6,819,000 mN
property perimeter
DMN
Kgd
West
Zone
North Zone
South Zone
PPa_s
PPa_l
2012 Soil Samples
Percentiles for: Au_ppm
16.5 =< 74.7 [<30%] (2)
74.7 =< 146.2 [30<60%] (1)
146.2 =< 1476.4 [60<80%] (1)
1476.4 =< 1725.6 [80<90%] (1)
2012 Rock Samples
Percentiles for: Au_ppb
2 =< 2 [<30%] (3)
2 =< 101 [30<60%] (1)
101 =< 352 [60<80%] (1)
352 =< 453 [80<90%] (3)
Symbols
34
270
Fault; strike & dip
34
Lineation, dip
LEGEND
Kgd Cretaceous granodiorite
DMN Nasina; micaceous schists, quartzites, undefined schists
PPa Slide Mountain: Ultramafics: serpentinite (PPa_s) and listwanite (PPa_l)
Geological contact, approximate
Geological contact, assumed
Note: geology modified after McKnight and Keyser, 2012.
VOYAGER GOLD CORP.
Vancouver, BC
Rivier Property
PROPERTY GEOLOGY
YUKON TERRITORY, CANADA
Date: Sept. 17, 2013
Author: RH
Drawn By: RH
NTS: 105G
Scale: 1:25,000
Figure: 5

MINERALIZATION

No economic mineralization has been directly identified on the property, though a 1988 exploration program by Welcome North Mines Ltd. identified two zones of possible gold-arsenic mineralization and anomalous soil geochemical values of up to 5,300 ppb gold (Potter, 1988), and the 2010 exploration program by Radius Gold Inc. identified a gold-silver-antimony-arsenic-nickel anomaly in soil extending around the ultramafic body (MacGearailt, 2010). Sulfides have been noted within the ultramafic unit.

Three zones of potential mineralization have been defined by the results of the 2010 and 2011 soil sampling program. These zones are coincident with the margins of the geomagnetic high, and are presently labelled North Zone, West Zone and South Zone. Values ranging from background to 2,625 ppb gold were obtained in the North Zone, from background to 2,265 ppb gold in the West Zone, and from background to 2,230 ppb gold in the South Zone.

The purpose of the work in 2012 was to examine the above gold in soil anomalies; to confirm them, to locate the source of the anomalies in bedrock and to design future exploration programs. As of this report there has been no mechanized trenching, mechanized soil sampling, or drilling on the Rivier Property.

DEPOSIT TYPES AND EXPLORATION MODEL

The Rivier Property is a gold-quartz vein type deposit exploration prospect located in a region that has historically been strongly associated with VMS deposits.

Mother-Lode type gold-quartz veins and veinlets with minor sulphide minerals crosscut a wide variety of host rocks and are localized along major regional faults and related splays. The wall rock is typically altered to silica, pyrite and muscovite within a broader carbonate alteration halo. Gold-quartz veins are found within zones of intense and pervasive carbonate alteration including listwanite alteration along second order or later faults marginal to transcrustal breaks. The favored orogenic regions are accreted oceanic terranes including mantle-derived ultramafic packages that have been subjected to tectonic forces (Ash and Arksey, 1990). Occurrences are typically recognized along or near major fault zones that cut oceanic and island arc accretionary terranes.

‘Listwanite’ is a term which describes a mineralogical assemblage derived from the carbonatization of serpentinized ultramafic rocks (Ash and Arksey, 1990). The resulting alteration suite that depending on alteration state can include talc, magnesite, chromium-rich micas (fuschite and mariposite), quartz, dolomite and magnesite, is often associated with lode gold deposits (Ash and Arksey, 1990).

The model for emplacement of gold involves the movement of a hydrothermal fluid rich in CO_2 and containing $Au(HS)_2$ through the reducing environment of the ultramafic body and occasionally, graphitic country rocks (Ash and Arksey, 1990). The association with gold mineralization is very frequent among areas with this particular geologic history, and most strongly associated with quartz-carbonate mineralization from late-stage progression of the alteration from serpentinite to listwanite. Generally, deposits of this type feature high-grade and low tonnage, if erratic, gold deposits (Ash and Arksey, 1990).

Gold veins are more commonly economic where hosted by relatively large, competent units, such as intrusions or blocks of obducted oceanic crust. Individual deposits average 30 000 tonnes with grades of 16 grams per tonne gold and 2.5 grams per tonne silver. Listwanite-lode gold deposits geographically near the project area include the Cassiar and Atlin districts in northern British Columbia (Dussell, 1986; Hansen, 2005). Other notable deposits are located in the California Mother Lode District, and the Ural Mountains of Russia where listwanite obtained its name (Ash and Arksey, 1990). Occurrences of listwanite are associated with alpine-type ultramafics.

VMS deposits located in the vicinity of the Rivier Property are associated with seafloor volcanism from the arc/back-arc paleo-environment of the Finlayson assemblage (Murphy et al, 2006). The Wolverine mine and the Kudz Ze Kayah VMS deposit are located 55 km and 31 km to the east respectively.

VMS deposits occur across lithologies of all ages and are formed in volcanically active seafloor environments with the formation of (commonly mafic) volcanic bodies, often with some association with explosive breccias and minor amounts of sedimentary rocks (Franklin, 1993). They continue to form at present around sulfide-rich, hydrothermal vents on the ocean floor known as 'black smokers.'

Deposits take form as massive bodies taking the form of an alteration pipe or a footwall-conformable assemblage, rich in ore-bearing iron sulfides dominated by pyrite, with an underlying 'stringer zone' containing stockworks. Typical economic mineralization in a VMS system consists of chalcopyrite, sphalerite, hematite and sometimes galena, bornite and tetrahedrite/tennantite alongside the dominant waste rock sulfides of pyrite and pyrrhotite. Strong, metasomatic, characteristically magnesium and chlorite alteration zones surround deposits, and a variety of ore zonation is typical. VMS deposits are important in the Canadian Cordillera as well as worldwide in the production of copper, zinc, lead, silver and gold (Guilbert and Park, 1986).

EXPLORATION

Geological Mapping

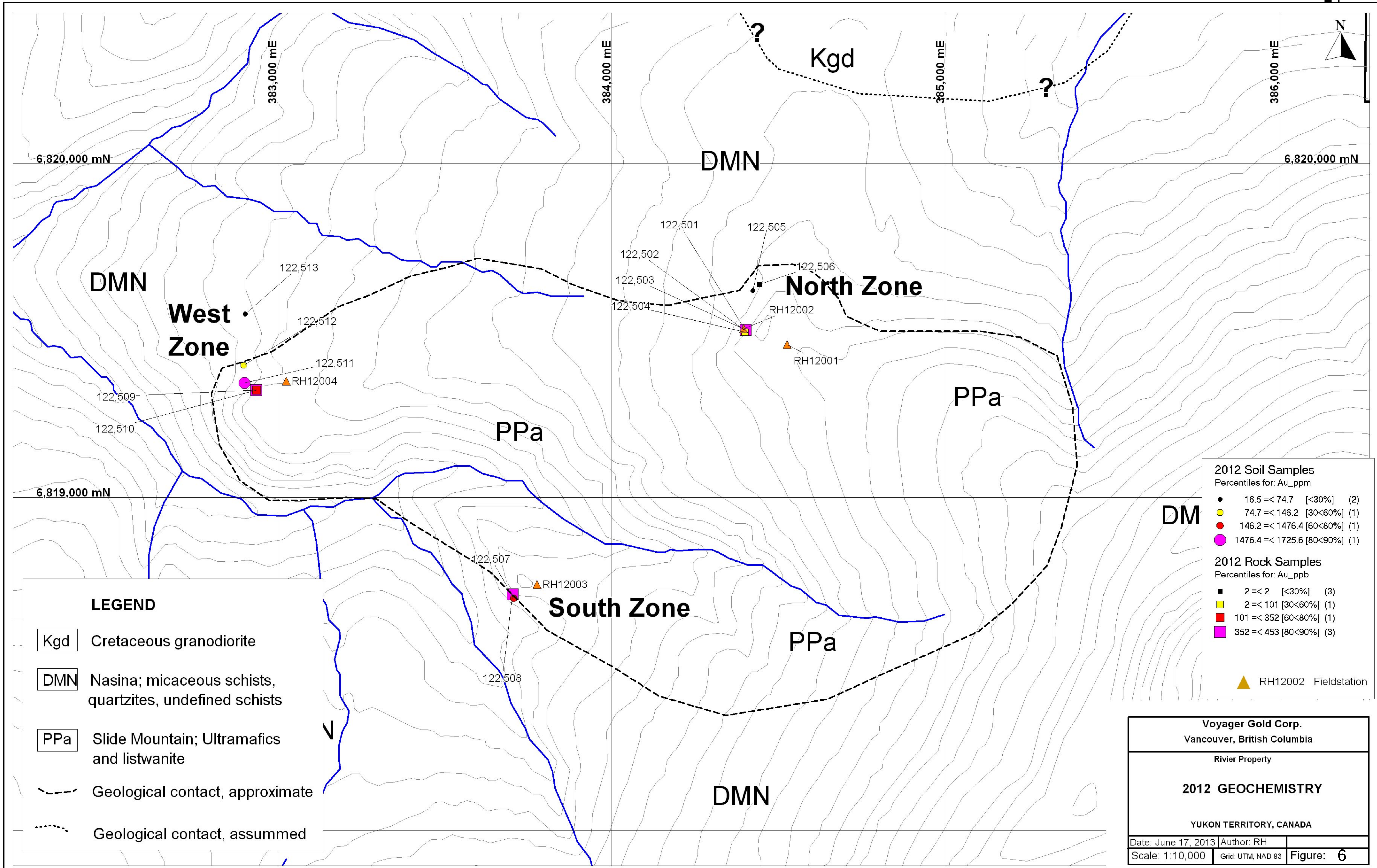
Mapping during the 2011 exploration program consisted of refining units and unit contacts outlined in Yukon Geological Survey (YGS) maps and furthering structural measurements from the 2010 program.

The YGS geological map shows a granitoid intrusion on the north boundary of the Property. Ground examination by Voyager Gold Corp. in 2010 and 2011, combined with the airborne geophysics did not locate the intrusion and the nature and certainty of its existence thus remains in question. This area was not examined in 2012.

Outcrop from the resistant ultramafic unit is abundant near topographic highs, and combined with geomagnetic data, some contacts between the ultramafic and schistose Nasina Assemblage units were mapped. Structural measurements denoted a possible east-west structural control for quartz veining in the area, potentially following an east-west trend in the bedding of the schistose unit observed by the general trend of a large series of topographic lineaments.

In 2012 three anomalous geochemical zones; North, South and West were investigated (Figure 6). Each zone contained a soil sample that contained > 2000 ppb gold plus numerous other samples with >49.9 ppb gold. All three zones are located on the margins of the listwanite and anomalous soil samples are also found over the nearby Nasina Group rocks. The listwanite is commonly cross cut by calcite veins, less commonly by quartz veins and only the quartz veins contained possible traces of fine grained disseminated sulfides (pyrite? and arsenopyrite?). At the South Zone, a fabric striking 186^{o}, dipping 16^{o} west, possibly a shear fabric, was noted cutting the listwanite. A fault striking 270^{o}, dipping 34^{o} north, cutting listwanite at the West Zone was found very close to the contact with Nasina Group rocks. This fault zone had been hand trenched with explosives to expose narrow quartz veins and silicification along the fault zone.

The anomalies at the three zones; North, South and West, were also examined as potential trenching targets, either by hand or mechanical trenching with light heli-portable excavators. As all three >2000 ppb gold soil anomalies were located on scree slopes with large blocks of felsenmeer, trenching would be difficult and problematic and has been ruled out for now as an exploration technique.



Kgd
DMN
PPa
West Zone
North Zone
South Zone
383,000 mE
384,000 mE
385,000 mE
386,000 mE
6,820,000 mN
6,819,000 mN
N
122,501
122,502
122,503
122,504
122,505
122,506
122,507
122,508
122,509
122,510
122,511
122,512
122,513
RH12001
RH12002
RH12003
RH12004
LEGEND
Kgd Cretaceous granodiorite
DMN Nasina; micaceous schists, quartzites, undefined schists
PPa Slide Mountain; Ultramafics and listwanite
Geological contact, approximate
Geological contact, assumed
2012 Soil Samples
Percentiles for: Au_ppm
16.5 =< 74.7 [<30%] (2)
74.7 =< 146.2 [30<60%] (1)
146.2 =< 1476.4 [60<80%] (1)
1476.4 =< 1725.6 [80<90%] (1)
2012 Rock Samples
Percentiles for: Au_ppb
2 =< 2 [<30%] (3)
2 =< 101 [30<60%] (1)
101 =< 352 [60<80%] (1)
352 =< 453 [80<90%] (3)
RH12002 Fieldstation
Voyager Gold Corp.
Vancouver, British Columbia
Rivier Property
2012 GEOCHEMISTRY
YUKON TERRITORY, CANADA
Date: June 17, 2013
Author: RH
Scale: 1:10,000
Grid: UTM, NAD 83
Figure: 6

Geochemical Sampling

Sampling in 2012 was limited to check soil samples over the 2011 soil sample sites that contained >2000 ppb plus other samples in the vicinity. Rock samples of various rock types were also collected in an effort to determine the source of the anomalous soil samples.

Figure 6 displays the sample locations on the Property and figure 7 displays the compiled geochemical samples collected from 2010 to 2012. Rock and soil sample descriptions, locations and analytical results are tabulated in Appendix A. Analytical certificates from Acme Labs in Vancouver are included in Appendix B. Sample methodology and analytical procedures are summarized in the analytical certificates.

Soil sampling

As noted above, sampling in 2012 was limited to the three anomalous zones identified in 2010 and 2011. Soil samples collected in 2011 were from a grid with 100 metre line spacing oriented east-west, and 50 metre north-south sample spacing. Line spacing was expanded to 200 metre spacing on the eastern and western sides of the grid in an effort to balance coverage with budget limitations.

A centimeter-scale ash layer was observed during geochemical sampling. This likely coincides with regional-scale ash layers deposited during geologically Recent Plinian eruptions in eastern Alaska which blanketed much of the Yukon. Possible glacial moraine (or till?) cover was observed at the north zone and this has the potential to complicate exploration in the area.

McKnight and Keyser (2012) noted that geochemical values for nickel and chromium are elevated within the magnetic high, which represents the serpentinite fraction of the ultramafic body.

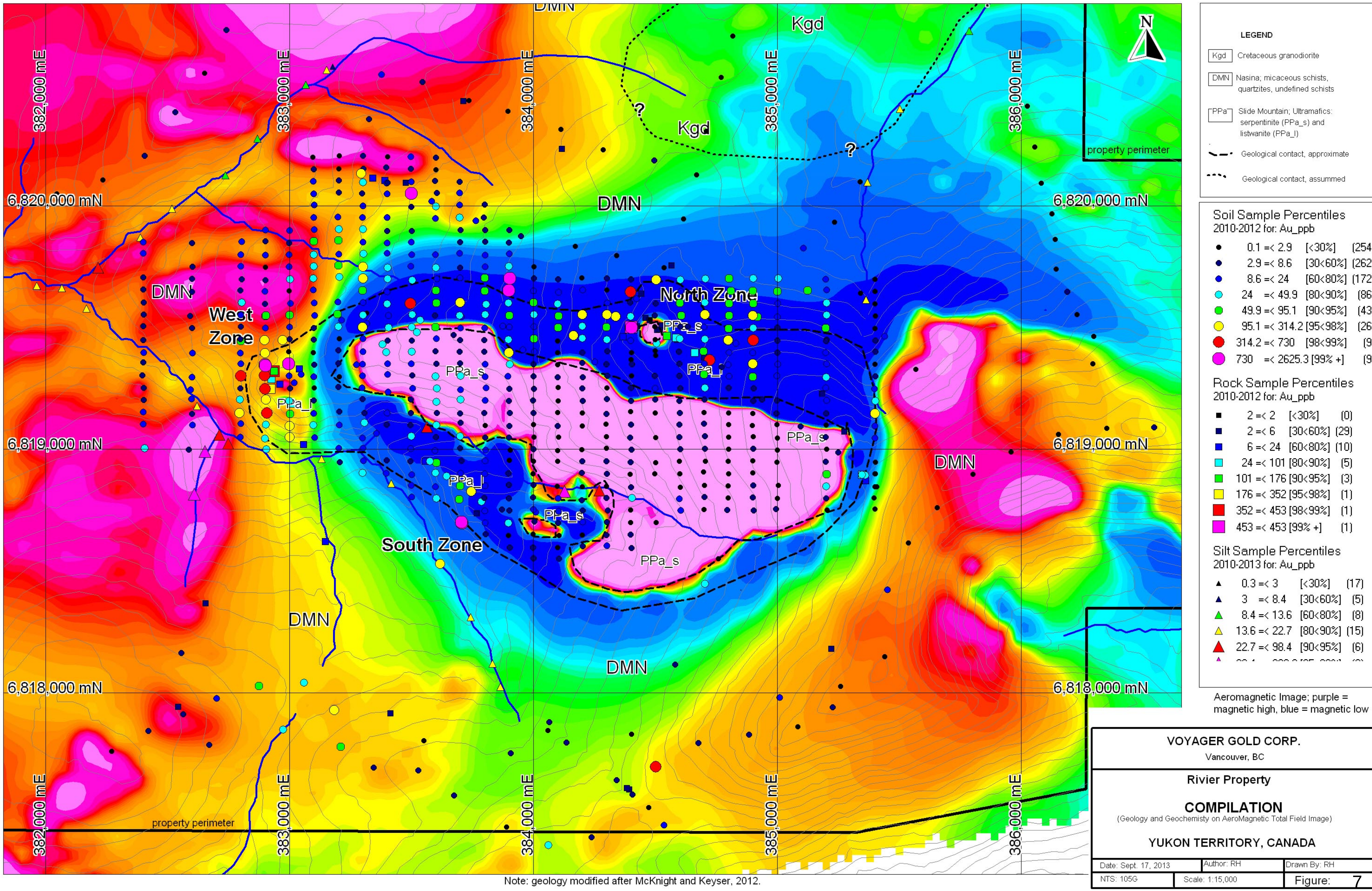
Soil sampling in 2012 at the North Zone was limited to one sample of black soil in area of graphitic shale that returned 16.5 ppb Au, 680.3 ppm As and 35.27 ppm Sb .

Sampling at the South Zone in 2012 consisted of one sample (122507) at the site of 2011 soil sample, number 1299862, which contained 2231 ppb Au. Results from 122507 duplicated the anomaly as results included 1476 ppb Au, 8842 ppm As and 120.01 ppm Sb.

Three soil samples collected in 2012 from the West Zone duplicated samples collected in 2011. All returned comparable results for gold and arsenic. Sample 122512 was collected approximately 0.5 meter deeper than 2011 sample 1299860 but analytical results were similar. At 2012 sample site 122513, sample media appeared to be glacial moraine material of rounded shale and argillite pebbles. The lack of obvious listwanite and anomalous values from this sample; 74.7 ppb Au, 442.1 ppm As and 18.41 ppm Sb indicate possible significant transport distances and a Nasina Group rock source area.

Silt sampling

No stream sediment samples were collected in 2012. Samples collected in 2011 were from streams surrounding the 2010 geochemical anomaly that were not sampled during the 2010 program. Values of 296 ppb Au and 2,228 ppb silver were obtained from a sample taken from a stream on the west side of the property that coincides with a magnetic high. Values of 87.5 ppb gold and 1,304 ppb silver were obtained from a second silt sample 175 metres downstream. This anomaly remains unexplained as no follow-up work has been carried out.



Note: geology modified after McKnight and Keyser, 2012.

Rock sampling

Rock sampling in 2010 and 2011 has returned low values for gold. The most significant result obtained during this time was 68.3 ppm silver, 8712 ppm lead, 2336 ppm zinc from locally-derived quartz in float from a small area near the center of the North Zone (McKnight and Keyser, 2012). The quartz is described as milky white with sub-millimeter, parallel to sub-parallel oxidized fractures.

Rock sampling in 2012 consisted of eight samples collected from the North, South and West Zones. Of five samples collected from the North Zone, sample 122503 returned a high value of 453 ppb Au from a grab of soil collected from the 2011 sample site (sample 1299505) that returned 2625.3 ppb Au. Sample 122503, although of ‘soil’ material (in this case C horizon and talus fines from possible fault zone), it was processed as a rock (not screened like a soil sample), to ascertain the total gold content. Results indicate that the sample contained gold bearing particles. Four other rock samples collected in the area returned low (<5 ppb) gold values. Of note is that soil sample 122505 (see above) collected in the same area of black soil derived from graphitic schist returned high values for arsenic and antimony, 680.3 ppm and 35.27 ppm respectively but only 16.5 ppb Au. It appears likely that a fault contact between graphitic schist and listwanite is the source of gold in soil in this area.

One rock float sample (122508) collected in 2012 at the South Zone near the site of 2011 soil sample, number 1299862, that contained 2231 ppb Au, contained 116 ppb Au, 825 ppm As and 14 ppm Sb. The sample, collected on a scree slope, consisted of listwanite cross cut by rare quartz – carbonate veinlets with slickensides on fracture surfaces. The source of gold for sample 1299862 remains unknown.

Two rock samples collected at the West Zone following up on anomalous soil samples collected in 2011 contained 352 ppb and 101 ppb gold. Both samples consisted of listwanite with sample 122509 (352 ppb Au) cut by quartz veins with disseminated pyrite and sample 122510 (101 ppb Au) cross cut by calcite veins. Although anomalous in gold, arsenic and antimony, a similar signature to the anomalous soil samples, gold values are low indicating that either the source of gold in bedrock remains unknown or that the gold is being preferentially weathered out of veins and fractures thereby enhancing the gold in soil sample results.

Geophysical Surveying

Voyager Gold Corp. contracted Precision GeoSurveys Inc. to fly a multi-sensor airborne geophysical survey over the entire Property area (McKnight and Keyser, 2012). The survey was conducted from October 14th to 19th, 2011 and consisted of combined magnetic and radiometric measurements over a total of 472 line kilometers at line spacings of 100 metres, with survey lines oriented north-south. The area flown covered the entire claim block as well as a variable buffer zone surrounding the claims, and covered an area of 43 square kilometers. Figure 7 displays the result of the total field aeromagnetic survey over the core of the property.

Magnetic data shows a very strong magnetic high corresponding to the ultramafic body. The carbonatization of serpentinite into listwanite consumes magnetite (Hansen, 2005). Therefore the magnetic data can be correlated with geochemical results to help delineate the ultramafic body into a unit of serpentinite and a separate unit of listwanite. The magnetic high is completely surrounded by a strong magnetic low which extends at least 200 meters in every direction with almost no visible gradient between the two. The magnetic low extends for a greater distance than listwanite is observed by mapping, particularly to the northeast. A magnetic relief of 3,700 nT between the magnetic high and low associated with the ultramafic body constitutes the most pronounced difference.

Todd Ballantyne, P.Geo., with in3D Geoscience Inc., was contracted in late 2012 to review, model and interpret the aeromagnetic survey results, his report is enclosed in Appendix C. The areomagnetics were used to help answer the question whether the untramafic – listwanite body is a shallow body underlain by a thrust fault, a klippe, or a deep rooted, possibly intrusive, body. Although not conclusive the preponderance of evidence indicates that the ultramafic – listwanite body is a depth limited source. The exact depth, or thickness, of the body could not be ascertained.

CONCLUSIONS AND RECOMMENDATIONS

The Rivier Property is likely a fault controlled gold-quartz vein lode-gold type prospect associated with a listwanite altered unltramafic body. Anomalous gold geochemical values in soil are found on the margins of a serpentinized and subsequently carbonatized ultramafic body. The listwanite alteration coincides with the interpreted shallow dipping thrust fault that juxtaposes the block of Slide Mountain Terrane over the rocks of the Nasina Group. The lithology and tectonic environment is favourable for the development of gold deposits, and a series of structural conduits as well as faulting at the base of the unconformity represent the possibility of structural controls for a deposit. The favourable location for development of the gold quartz veins is within or adjacent to second or third order structures related to the regional Tintina Fault system.

The magnetic data can be correlated with geochemical results to help delineate the ultramafic body into a unit of serpentinite and a separate unit of listwanite. A continuation of the magnetic low to the northeast beyond where the ultramafic unit is present at surface may indicate extension of the listwanite body underneath the schistose unit.

Results from geochemical soil sampling on the property have yielded anomalous results for gold-silver-arsenic-antimony in three principal areas named the North, South and West Zones. Within the three anomalous zones gold values above 2,000 ppb have been obtained from soil samples. The suite of metals is typical of gold with pathfinder elements in listwanite settings. Figure 7 displays the compilation of the exploration to date and the locations of the three gold-in-soil anomalous zones. The elevated values for gold-silver-arsenic-antimony are associated with magnetic lows at the flanks of the magnetic high.

Work in 2012 examined the three >2000 ppb gold in soil anomalies at the North, South and West Zones. The presence of anomalous gold values in soil was confirmed at all three zones by confirmation rock (at the North Zone) and soil samples (at South and West Zones). At the North Zone the anomalous gold in soil anomaly was determined to be likely from a fault zone between graphitic schist and listwantite. At the South and West Zones the bedrock source of the >2000 ppb gold in soil anomalies remains unexplained although both areas are scree slopes composed of blocky listwanite. Due to the steep slopes and blocky scree at all three zones, hand or mechanized trenching by light heli-portable equipment would not be practicable.

Although two soil geochemistry sampling programs have been carried out, in 2010 and 2011, the southwest margin of the ultramafic-listwanite body has not been covered by the sampling grids. The anomalous stream sediment samples located south of the West Zone have not been followed up on and remain unexplained. The Rivier Property represents an early-stage gold prospect on which further exploration is warranted.

The following work is recommended:

1. Expand upon the current soil sample grid coverage with an emphasis on the south west side of the ultramafic – listwanite body and current anomalies that are not constrained. Multi-element geochemical analyses must be made.
2. Carry out detailed geological mapping at a scale of 1:2000 or better in prospective areas. Further subdivide the listwanite unit and neighboring units into differing alteration assemblages based on affinity for gold mineralization.
3. Investigate the possibility of geophysics, particularly Horizontal Loop Electromagnetics (HLEM) and induced polarization (IP) as a means to map the subsurface geology in areas anomalous for gold.

4. Continue to investigate the possibility of carrying out hand and/or mechanized trenching in anomalous zones.
6. All exploration work should be directed towards identifying diamond drill targets.

Respectfully submitted,

Roger Hulstein, P.Geo.

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STATEMENT OF QUALIFICATIONS - RWH

I, Roger W. Hulstein, hereby certify that:

1. I am a consulting geologist with office address located at; 106 Wilson Drive, Whitehorse, Yukon, Y1A 0C9.
2. I am an officer, director and shareholder of Voyager Gold Corp., and a shareholder of Radius Gold Inc. and the underlying owner on most of the Rivier claims. Therefore, I am not independent of Voyager Gold nor the Rivier property. This report is intended to satisfy assessment requirements, and may not be used in any circumstance that may require an independent report under securities regulations.
3. I am a graduate of Saint Mary's University, Halifax, with a B.Sc. in geology (1981).
4. I have been employed as a geologist on a full-time and part-time basis continuously since 1978.
5. I am registered as a professional geoscientist (No. 19127) with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
6. I am a fellow of the Geological Association of Canada (F3572).
7. I am the author of this report on the Rivier Property, which is based on my personal examination of the property on August 25th 2012, and on data from referenced sources.
8. This report is intended to satisfy assessment requirements, however, I consent to the use of this report by Voyager Gold Corp. for any purpose deemed necessary, including public disclosure, provided that no portion is used out of context in such a manner as to convey a meaning differing materially from that set out in the whole.

Roger Hulstein, B.Sc., FGAC, P.Geo.

September 2, 2013

STATEMENT OF COSTS

The following estimated expenditures were incurred on the Rivier claims in the course of the work described in this report.

Table 2. *Statement of Costs*

Item	Cost $
Geophysical Study (in3D Geosciences Inc.)	5000
Field personnel (Aug. 25, 2012)	
R. Hulstein (geologist)	600
H. Keyser (geologist)	600
E. Keyser (assistant)	300
Geochemistry	789
Helicopter (Precision GeoSurveys)	4050
Yukon Travel & Accommodation	214
Vehicle (Precision GeoSurveys)	200
Report and Reprographics (HGS)	2500
Total	$14,253

APPENDIX A

Sample Descriptions with

Analytical Results

	2012 Rivier Project																				
	All Locations: UTM Zone 9V, NAD83																				
	Rock sample Descriptions																				
Samp_Num	Zone	East	North	Elev_m	Date	Sampler	DESCRIPTION	Photo	Wgt_Kg	Au_ppb_3B	Mo_ppm	Cu_ppm	Pb-ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_ppm	Fe%	As_ppm
122501	North	384396	6819506	1718	25-Aug-12	RwH	Grab from float of qtz-schist in scree of listwanite altered ultramafic, approx 10% qtz with limonite.	y	1.73	2	1	33	42	36	0.6	18	6	1640	2.91	331
122502	North	384405	6819495	1713	25-Aug-12	RwH	Selected sample of rusty weathering qtz-carb vein float cutting listwanite, overall <1% in abundance.		0.79	2	1	1	19	1	0.3	603	10	165	1.61	81
122503	North	384400	6819502	1717	25-Aug-12	RwH	Grab of soil at soil sample site 1299505; same material but to be processed as rock sample and not screened. Soil is red-brn list and chl (black) shist plus minor qtz with limonite. Soil could be part of fault zone.		1.55	453	1	40	15	38	2.9	94	16	1038	3.88	4975
122504	North	384398	6819495	1714	25-Aug-12	RwH	Grab from scree of black weathering (chlorite?) schist with qtz frags - possible brx? List scree boulders with slicks.		1.95	5	1	21	17	64	0.3	22	6	432	2.2	75
122506	North	384442	6819639	1698	25-Aug-12	RwH	Float boulder of carb vein cross cutting listwanite and carb (calcite) stockwork. Grab of crystalline 'bladed' calcite vein float approx. 0.3m thick.	y	2.19	2	1	1	15	1	0.3	440	7	56	0.6	8
122508	South	383703	6818709	1519	25-Aug-12	RwH	South Zone. Float from scree slope above anomalous soil. Sample of mariposite-fuschite altered ultramafic with with disseminated black specks and rare cross cutting qtz-carb veinlets and larger brown carb veinlets, slicksides, not very exciting sample...	y	2.08	116	1	8	22	17	1.2	864	48	464	3.11	825
122509	West	382935	6819321	1506	25-Aug-12	RwH	West Zone. Float from scree slope of listwanite-mariposite altered UM, with qtz veinlets, <1% dis py. Py weathers rusty - unusual in area.		1.51	352	1	6	20	1	0.6	1330	67	665	3.53	1449
122510	West	382936	6819321	1501	25-Aug-12	RwH	West Zone. Float of rusty weathering - gossanous UM cross cut rare calcite veins.		1.58	101	1	3	6	7	0.3	1015	36	488	2.06	1004

Samp_Num	Th_ppm	Sr_ppm	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca%	P%	La_ppm	Cr_ppm	Mg%	Ba_ppm	Ti%	B_ppm	Al%	Na%	K%	W_ppm	S%	Sc_ppm	Ga_ppm	Hg_ppm	Tl_ppm	Certificate
122501	2	276	0.5	9	3	5	4.45	0.002	1	17	1.67	39	0.001	20	0.04	0.01	0.03	2	0.05	5	5	1	5	WHI12000836
122502	2	417	0.5	16	3	28	8.41	0.001	1	63	14.55	18	0.001	20	0.02	0.01	0.01	6	0.05	5	5	1	5	WHI12000836
122503	2	78	0.5	13	3	10	1.01	0.029	4	11	0.48	312	0.001	20	0.31	0.01	0.17	2	0.05	7	5	1	5	WHI12000836
122504	2	57	0.5	4	3	9	1.14	0.02	3	14	0.55	130	0.001	20	0.18	0.01	0.1	2	0.05	5	5	1	5	WHI12000836
122506	2	330	0.5	3	3	20	9.44	0.001	1	18	17.99	16	0.001	20	0.02	0.01	0.01	4	0.05	5	5	1	5	WHI12000836
122508	2	169	0.5	14	3	6	2.75	0.001	1	277	12.91	24	0.001	20	0.07	0.01	0.03	2	0.05	5	5	1	5	WHI12000836
122509	2	198	0.5	44	3	10	0.87	0.001	1	248	15.78	82	0.001	20	0.02	0.01	0.01	2	0.91	5	5	1	5	WHI12000836
122510	2	540	0.5	121	3	7	7.77	0.002	1	123	6.4	22	0.001	20	0.03	0.01	0.01	2	0.05	5	5	1	5	WHI12000836

		2012 Rivier Project											
		All Locations: UTM Zone 9V, NAD83											
		Soil sample Descriptions											
Samp_Num	Samp_Type	Date	Description	Zone	Easting	Northing	Elevation	m	Mo_ppm	Cu_ppm	Pb-ppm	Zn_ppm	Ag_ppm
122505	soil	25-Aug-12	Black soil in vicinity of black, possibility graphitic, schist, no qtz in visible in sample	North	384422	6819619	1697	m	8.54	96.59	15.5	148.6	990
122507	soil	25-Aug-12	At site of 2011 sample 1299629 (2231 ppb Au). Red-brown soil, float of listwanite, abundant mariposite, specks of fine black mineral (arsenopyrite?) and minor cross cutting qtz vein.	South	383706	6818697	1520	m	1.23	120.22	13.07	83.5	14152
122511	soil	25-Aug-12	At site of 2011 sample 1299862 (2266 ppb Au). Brown soil, float of listwanite, pyrite in fracture veinlet in limonite altered ultramafic schist.	West	382900	6819343	1487	m	0.74	67.82	12.87	97.9	1753
122512	soil	25-Aug-12	Dark grey soil, some organics but well below A horizon and ash, approx. 60cm deep. Collected next to sample 1299860, an approx. 25 cm deep auger hole, that contained 117.8 ppb Au and 683.9 ppm As.	West	382898	6819396	1484	m	3.46	47.15	29.29	195.4	2126
122513	soil	25-Aug-12	Likely moraine material, rounded grey shale - argillite pebbles. Very close to site of 2011 sample 1299858 that contained 59.5 ppb Au and 738.9 ppm As.	West	382902	6819550	1494	m	3.31	45.54	22.49	159.4	2327

Samp_ Num	Ni_ppm	Co_ppm	Mn_ppm	Fe%	As_ppm	U_ppm	Au_ppm	Th_ppm	Sr_ppm	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca%	P%	La_ppm	Cr_ppm	Mg%	Ba_ppm
122505	766.5	55.2	694	4.74	680.3	3.1	16.5	10.2	91.1	1.08	35.27	0.37	27	0.75	0.145	15.1	245.7	2.32	292.3
122507	747.9	58	724	7.51	8842.1	0.6	1476.4	3.4	96.9	0.39	120.01	0.16	20	1.68	0.044	8.3	102.6	1.32	196.6
122511	1755.5	104.1	1767	7.91	5037.7	0.5	1725.6	1	52.5	0.46	198.13	0.07	40	0.82	0.079	7.6	233.4	1.54	231.7
122512	214.5	30.1	800	4.73	597.6	1.9	146.2	5.5	37.3	1.46	29.63	0.48	42	0.52	0.087	20	92.4	0.63	583.6
122513	78.2	14	461	3.46	442.1	1.1	74.7	4.1	32.4	0.74	18.41	0.31	45	0.47	0.096	21.4	39.9	0.5	439.7

Samp_ Num	Ti%	B_ppm	Al%	Na%	K%	W_ppm	Sc_ppm	Tl_ppm	S%	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm
122505	0.002	5	0.4	0.002	0.09	0.9	5.8	0.13	0.2	36	1.9	0.04	1.1	8.1	0.1	0.11	0.04	7.6	0.6
122507	0.003	5	0.35	0.002	0.09	1.4	15.1	0.43	0.05	207	0.6	0.04	0.8	10.23	0.1	0.04	0.19	9.1	1.5
122511	0.003	5	0.67	0.008	0.06	1.6	20.1	0.66	0.06	170	0.4	0.05	1.7	5.35	0.1	0.04	0.21	9.7	1.2
122512	0.004	2	1.38	0.003	0.1	0.5	7.8	0.24	0.03	200	1.2	0.09	3.5	2.67	0.1	0.1	0.43	15.6	2.1
122513	0.009	3	1.22	0.004	0.1	0.3	4.2	0.19	0.02	138	0.9	0.06	3.6	2.12	0.1	0.02	0.44	11.2	2.1

Samp_ Num	Ta_ppm	Zr_ppm	Y_ppm	Ce_ppm	In_ppm	Re_ppm	Be_ppm	Li_ppm	Pd_ppm	Pt_ppm
122505	0.05	10.3	9.6	29.7	0.05	3	1.2	3.3	10	2
122507	0.05	1.4	7.36	16.9	0.04	1	0.9	3.6	13	2
122511	0.05	1.4	10.68	15	0.05	1	0.8	5.3	10	4
122512	0.05	3.5	12.83	34	0.04	1	1.1	14	10	2
122513	0.05	0.9	9.27	43.5	0.05	1	0.6	16.4	10	2

APPENDIX B

Analytical Results

AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada

www.acmelab.com

Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Submitted By:	Harmen Keyser
Receiving Lab:	Canada-Whitehorse
Received:	September 06, 2012
Report Date:	September 26, 2012
Page:	1 of 2

CERTIFICATE OF ANALYSIS WHI12000835.1

CLIENT JOB INFORMATION

Project:	Rivier
Shipment ID:	2012-01
P.O. Number	
Number of Samples:	5

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
S150	5	Sieve to 150 mesh			WHI
1F05	5	1:1:1 Aqua Regia digestion Ultratrace ICP-MS analysis	15	Completed	VAN

SAMPLE DISPOSAL

STOR-PLP	Store After 90 days Invoice for Storage
DISP-RJT-SOIL	Immediate Disposal of Soil Reject

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

ADDITIONAL COMMENTS

Invoice To: Voyager Gold Corp.
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6
Canada

CC: Roger Hulstein

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
www.acmelab.com

Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

CERTIFICATE OF ANALYSIS WHI12000835.1

Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
122505	8.54	96.59	15.50	148.6	990	766.5	55.2	694	4.74	680.3	3.1	16.5	10.2	91.1	1.08	35.27	0.37	27	0.75	0.145
122507	1.23	120.2	13.07	83.5	14152	747.9	58.0	724	7.51	8842	0.6	1476	3.4	96.9	0.39	120.0	0.16	20	1.68	0.044
122511	0.74	67.82	12.87	97.9	1753	1755	104.1	1767	7.91	5038	0.5	1726	1.0	52.5	0.46	198.1	0.07	40	0.82	0.079
122512	3.46	47.15	29.29	195.4	2126	214.5	30.1	800	4.73	597.6	1.9	146.2	5.5	37.3	1.46	29.63	0.48	42	0.52	0.087
122513	3.31	45.54	22.49	159.4	2327	78.2	14.0	461	3.46	442.1	1.1	74.7	4.1	32.4	0.74	18.41	0.31	45	0.47	0.096

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AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
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Phone (604) 253-3158 Fax (604) 253-1716
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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

CERTIFICATE OF ANALYSIS WHI12000835.1

Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
Analyte	**La**	**Cr**	**Mg**	**Ba**	**Ti**	**B**	**Al**	**Na**	**K**	**W**	**Sc**	**Tl**	**S**	**Hg**	**Se**	**Te**	**Ga**	**Cs**	**Ge**	**Hf**
Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm	ppm
MDL	0.5	0.5	0.01	0.5	0.001	1	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.02	0.1	0.02
122505	15.1	245.7	2.32	292.3	0.002	5	0.40	0.002	0.09	0.9	5.8	0.13	0.20	36	1.9	0.04	1.1	8.10	<0.1	0.11
122507	8.3	102.6	1.32	196.6	0.003	5	0.35	0.002	0.09	1.4	15.1	0.43	0.05	207	0.6	0.04	0.8	10.23	<0.1	0.04
122511	7.6	233.4	1.54	231.7	0.003	5	0.67	0.008	0.06	1.6	20.1	0.66	0.06	170	0.4	0.05	1.7	5.35	0.1	0.04
122512	20.0	92.4	0.63	583.6	0.004	2	1.38	0.003	0.10	0.5	7.8	0.24	0.03	200	1.2	0.09	3.5	2.67	0.1	0.10
122513	21.4	39.9	0.50	439.7	0.009	3	1.22	0.004	0.10	0.3	4.2	0.19	<0.02	138	0.9	0.06	3.6	2.12	<0.1	<0.02

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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

CERTIFICATE OF ANALYSIS WHI12000835.1

Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
Analyte	Nb	Rb	Sn	Ta	Zr	Y	Ce	In	Re	Be	Li	Pd	Pt
Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb
MDL	0.02	0.1	0.1	0.05	0.1	0.01	0.1	0.02	1	0.1	0.1	10	2
122505	0.04	7.6	0.6	<0.05	10.3	9.60	29.7	0.05	3	1.2	3.3	<10	<2
122507	0.19	9.1	1.5	<0.05	1.4	7.36	16.9	0.04	<1	0.9	3.6	13	<2
122511	0.21	9.7	1.2	<0.05	1.4	10.68	15.0	0.05	<1	0.8	5.3	<10	4
122512	0.43	15.6	2.1	<0.05	3.5	12.83	34.0	0.04	<1	1.1	14.0	<10	<2
122513	0.44	11.2	2.1	<0.05	0.9	9.27	43.5	0.05	<1	0.6	16.4	<10	<2

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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

QUALITY CONTROL REPORT WHI12000835.1

	Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
	Analyte	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P
	Unit	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%
	MDL	0.01	0.01	0.01	0.1	2	0.1	0.1	1	0.01	0.1	0.1	0.2	0.1	0.5	0.01	0.02	0.02	2	0.01	0.001
Reference Materials																					
STD DS9	Standard	14.22	113.1	129.7	306.4	1907	41.6	7.9	604	2.40	25.9	3.0	129.8	7.4	77.3	2.47	6.04	7.02	39	0.75	0.083
STD DS9	Standard	13.44	104.8	119.1	309.2	1897	38.7	7.5	586	2.31	24.6	2.6	131.1	6.2	68.9	2.27	5.17	5.47	40	0.75	0.083
STD DS9 Expected		12.84	108	126	317	1830	40.3	7.6	575	2.33	25.5	2.69	118	6.38	69.6	2.4	4.94	6.32	40	0.7201	0.0819
BLK	Blank	<0.01	<0.01	<0.01	<0.1	4	<0.1	<0.1	<1	<0.01	<0.1	<0.1	<0.2	<0.1	<0.5	<0.01	<0.02	<0.02	<2	<0.01	<0.001

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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

QUALITY CONTROL REPORT WHI12000835.1

	Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
	Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Sc	Tl	S	Hg	Se	Te	Ga	Cs	Ge	Hf
	Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.5	0.5	0.01	0.5	0.001	1	0.01	0.001	0.01	0.1	0.1	0.02	0.02	5	0.1	0.02	0.1	0.02	0.1	0.02
Reference Materials																					
STD DS9	Standard	15.9	116.6	0.62	313.3	0.120	3	1.00	0.085	0.40	3.2	2.8	5.49	0.15	218	5.5	5.04	4.7	2.43	<0.1	0.09
STD DS9	Standard	15.0	114.7	0.64	305.6	0.114	3	1.03	0.085	0.41	3.1	2.6	5.75	0.16	226	5.4	5.27	5.0	2.49	<0.1	0.09
STD DS9 Expected		13.3	121	0.6165	295	0.1108		0.9577	0.0853	0.395	2.89	2.5	5.3	0.1615	200	5.2	5.02	4.59	2.37	0.1	0.08
BLK	Blank	<0.5	<0.5	<0.01	<0.5	<0.001	<1	<0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	<0.02	<0.1	<0.02	<0.1	<0.02

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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 26, 2012

QUALITY CONTROL REPORT WHI12000835.1

	Method	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15	1F15
	Analyte	Nb	Rb	Sn	Ta	Zr	Y	Ce	In	Re	Be	Li	Pd	Pt
	Unit	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb
	MDL	0.02	0.1	0.1	0.05	0.1	0.01	0.1	0.02	1	0.1	0.1	10	2
Reference Materials														
STD DS9	Standard	1.30	33.6	6.7	<0.05	2.2	6.45	30.2	2.20	83	5.8	26.4	117	363
STD DS9	Standard	1.55	35.8	6.1	<0.05	2.0	6.81	28.9	2.18	66	5.6	25.7	122	356
STD DS9 Expected		1.33	33.8	6.4	0.004	2	5.97	25.4	2.2	61	5.4	25.2	120	350
BLK	Blank	<0.02	<0.1	<0.1	<0.05	<0.1	<0.01	<0.1	<0.02	<1	<0.1	<0.1	<10	<2

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AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada

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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Submitted By:	Harmen Keyser
Receiving Lab:	Canada-Whitehorse
Received:	September 06, 2012
Report Date:	September 21, 2012
Page:	1 of 2

CERTIFICATE OF ANALYSIS WHI12000836.1

CLIENT JOB INFORMATION

Project:	Rivier
Shipment ID:	2012-02
P.O. Number	
Number of Samples:	8

SAMPLE DISPOSAL

STOR-PLP	Store After 90 days Invoice for Storage
DISP-RJT	Dispose of Reject After 90 days

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

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
R200-250	8	Crush, split and pulverize 250 g rock to 200 mesh			WHI
3B01	8	Fire assay fusion Au by ICP-ES	30	Completed	VAN
1D01	8	1:1:1 Aqua Regia digestion ICP-ES analysis	0.5	Completed	VAN

ADDITIONAL COMMENTS

Invoice To: Voyager Gold Corp.
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6
Canada

CC: Roger Hulstein

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.
All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
Phone (604) 253-3158 Fax (604) 253-1716
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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 21, 2012

CERTIFICATE OF ANALYSIS WHI12000836.1

Method	WGHT	3B	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
Analyte	Wgt	Au	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca
Unit	kg	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
MDL	0.01	2	1	1	3	1	0.3	1	1	2	0.01	2	2	2	1	0.5	3	3	1	0.01
122501	1.73	<2	<1	33	42	36	0.6	18	6	1640	2.91	331	<2	<2	276	<0.5	9	<3	5	4.45
122502	0.79	<2	<1	<1	19	<1	<0.3	603	10	165	1.61	81	<2	<2	417	<0.5	16	<3	28	8.41
122503	1.55	453	1	40	15	38	2.9	94	16	1038	3.88	4975	<2	<2	78	<0.5	13	<3	10	1.01
122504	1.95	5	<1	21	17	64	<0.3	22	6	432	2.20	75	<2	<2	57	<0.5	4	<3	9	1.14
122506	2.19	<2	<1	<1	15	<1	<0.3	440	7	56	0.60	8	<2	<2	330	<0.5	<3	<3	20	9.44
122508	2.08	116	<1	8	22	17	1.2	864	48	464	3.11	825	<2	<2	169	<0.5	14	<3	6	2.75
122509	1.51	352	<1	6	20	<1	0.6	1330	67	665	3.53	1449	<2	<2	198	<0.5	44	<3	10	0.87
122510	1.58	101	<1	3	6	7	<0.3	1015	36	488	2.06	1004	<2	<2	540	<0.5	121	<3	7	7.77

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AcmeLabs Acme Analytical Laboratories (Vancouver) Ltd.
1020 Cordova St. East Vancouver BC V6A 4A3 Canada
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Client: **Voyager Gold Corp.**
Suite 650 - 200 Burrard Street
Vancouver BC V6C 3L6 Canada

Project: Rivier
Report Date: September 21, 2012

CERTIFICATE OF ANALYSIS WHI12000836.1

Method	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
Analyte	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
MDL	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
122501	0.002	1	17	1.67	39	<0.001	<20	0.04	<0.01	0.03	<2	<0.05	<1	<5	<5	<5
122502	<0.001	<1	63	14.55	18	<0.001	<20	0.02	0.01	<0.01	6	<0.05	<1	<5	<5	<5
122503	0.029	4	11	0.48	312	<0.001	<20	0.31	<0.01	0.17	<2	<0.05	<1	<5	<5	7
122504	0.020	3	14	0.55	130	<0.001	<20	0.18	<0.01	0.10	<2	<0.05	<1	<5	<5	<5
122506	<0.001	1	18	17.99	16	<0.001	<20	0.02	0.01	<0.01	4	<0.05	<1	<5	<5	<5
122508	<0.001	<1	277	12.91	24	<0.001	<20	0.07	<0.01	0.03	<2	<0.05	<1	<5	<5	<5
122509	<0.001	1	248	15.78	82	<0.001	<20	0.02	<0.01	0.01	<2	0.91	<1	<5	<5	<5
122510	0.002	<1	123	6.40	22	<0.001	<20	0.03	<0.01	0.01	<2	<0.05	<1	<5	<5	<5

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Project: Rivier
Report Date: September 21, 2012

QUALITY CONTROL REPORT WHI12000836.1

	Method	WGHT	3B	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
	Analyte	Wgt	Au	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca
	Unit	kg	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	2	1	1	3	1	0.3	1	1	2	0.01	2	2	2	1	0.5	3	3	1	0.01
Core Reject Duplicates																					
122510	QC	1.58	101	<1	3	6	7	<0.3	1015	36	488	2.06	1004	<2	<2	540	<0.5	121	<3	7	7.77
DUP 122510	QC		105	<1	4	6	8	<0.3	1043	37	501	2.11	1031	<2	<2	540	<0.5	127	<3	7	7.79
Reference Materials																					
STD DS9	Standard			14	101	126	324	1.7	42	6	585	2.36	29	<2	5	72	2.5	3	7	42	0.71
STD OREAS45CA	Standard			1	502	24	74	<0.3	249	92	935	14.75	3	<2	6	15	0.7	<3	<3	212	0.42
STD OXD87	Standard		419																		
STD OXG99	Standard		924																		
STD OREAS45CA Expected				1	494	20	60	0.275	240	92	943	15.69	3.8	0.043	7	15	0.1	0.13	0.19	215	0.4265
STD DS9 Expected				12.84	108	126	317	1.83	40.3	7.6	575	2.33	25.5	0.118	6.38	69.6	2.4	4.94	6.32	40	0.7201
STD OXD87 Expected			417																		
STD OXG99 Expected			932																		
BLK	Blank			<1	<1	<3	<1	<0.3	<1	<1	<2	<0.01	<2	<2	<2	<1	<0.5	<3	<3	<1	<0.01
BLK	Blank		2																		
BLK	Blank		<2																		
Prep Wash																					
G1-WHI	Prep Blank		4	<1	4	90	65	1.2	4	2	618	1.94	<2	<2	4	51	<0.5	<3	<3	38	0.43

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QUALITY CONTROL REPORT WHI12000836.1

	Method	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D	1D
	Analyte	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	S	Hg	Tl	Ga	Sc
	Unit	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	%	ppm	ppm	ppm	ppm
	MDL	0.001	1	1	0.01	1	0.001	20	0.01	0.01	0.01	2	0.05	1	5	5	5
Core Reject Duplicates																	
122510	QC	0.002	<1	123	6.40	22	<0.001	<20	0.03	<0.01	0.01	<2	<0.05	<1	<5	<5	<5
DUP 122510	QC	0.002	<1	128	6.48	22	<0.001	<20	0.03	<0.01	0.01	<2	<0.05	<1	<5	<5	<5
Reference Materials																	
STD DS9	Standard	0.086	12	117	0.63	331	0.108	<20	0.95	0.09	0.40	2	0.17	<1	<5	<5	<5
STD OREAS45CA	Standard	0.040	16	739	0.10	167	0.135	<20	3.55	0.02	0.08	<2	<0.05	<1	<5	26	48
STD OXD87	Standard																
STD OXG99	Standard																
STD OREAS45CA Expected		0.0385	15.9	709	0.1358	164	0.128		3.592	0.0075	0.0717		0.021	0.03	0.07		
STD DS9 Expected		0.0819	13.3	121	0.6165	330	0.1108		0.9577	0.0853	0.395	2.89	0.1615	0.2	5.3	4.59	2.5
STD OXD87 Expected																	
STD OXG99 Expected																	
BLK	Blank	<0.001	<1	<1	<0.01	<1	<0.001	<20	<0.01	<0.01	<0.01	<2	<0.05	<1	<5	<5	<5
BLK	Blank																
BLK	Blank																
Prep Wash																	
G1-WHI	Prep Blank	0.083	8	12	0.60	233	0.123	<20	0.92	0.06	0.48	<2	<0.05	<1	<5	<5	<5

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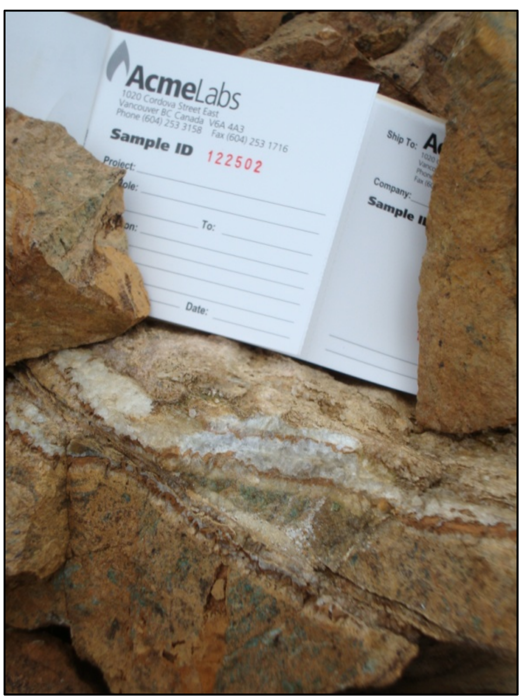
APPENDIX C

Photographs

North Zone. Harmen (left) and E. Keyser at rock sample site 122501, 2 ppb Au, 2.9 Ag, 331 ppm As, 9 ppm Sb and also location of 2011 soil sample site 1299505; 2625.3 ppb Au, 9298 ppb Ag , >10,000 ppm As, 85.57 ppm Sb



North Zone. Rock sample 122502, 2 ppb Au, 81 ppm As, 16 ppm Sb, calcite veins cutting listwanite.

North Zone. Soil sample 122505, 16.5 ppb Au, 680.3 ppm As, 35.27 ppm Sb, grey graphitic 'soil' and listwanite float.

North Zone. Rock sample 122504, no significant values, float of schist – quartz (breccias?) and tan listwanite.

North Zone. Rock sample site 122506, white-grey calcite vein cutting listwanite in float block, no significant values.

South Zone. Soil sample site 122507 (next to 2011 soil sample 1299629), 1476.4 ppb Au, 14152 ppb Ag, 8842.1 ppm As, 120.01 ppm Sb, listwanite float.

South Zone. H. Keyser (left) and E. Keyser at rock sample site 122508 (next to soil sample 122507), 116 ppm Au, 1.2 ppm Ag, 825 ppm As, 14 ppm Sb, listwanite outcrop and scree in background.

View from South Zone looking west to West Zone; knoll on right in middle foreground of reddish-orange weathering listwanite.

West Zone. Rock float sample 122509; 352 ppb Au, 1339 ppm As, 44 ppm Sb, quartz veined and silicified listwanite.

West Zone. Rock float sample 122510; 101 ppm Au, 1004 ppm As, 121 ppm Sb, calcite veins cutting listwanite.

West Zone. Soil sample site 122512, 146.2 ppm au, 597.6 ppm As, 29.63 ppm Sb, 60 cm deep, note white ash horizon.

West Zone. Soil sample site 122513, 74.7 ppb Au, 442.1 ppm As, 18.41 ppm Sb. Hammer handle in 2011 auger soil sample hole 1299858. Note moraine or till material of mixed lithologies and rounded pebbles.

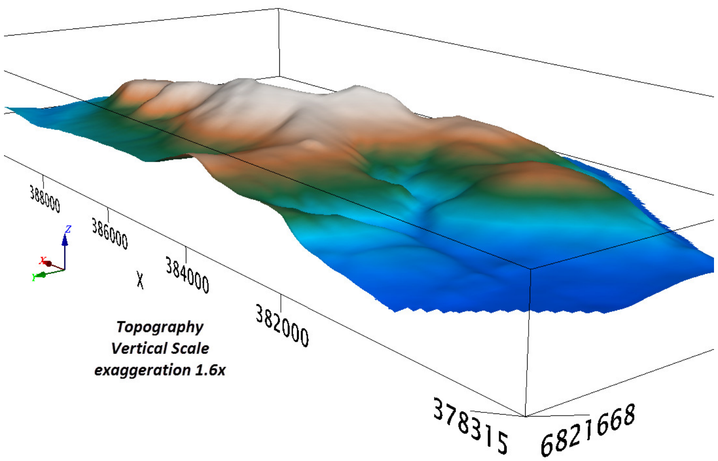
West Zone. E. Keyser (left) and R. Hulstein at soil sample site 122513 looking south at listwanite scree slope, site of rock samples 122509 and 122510.

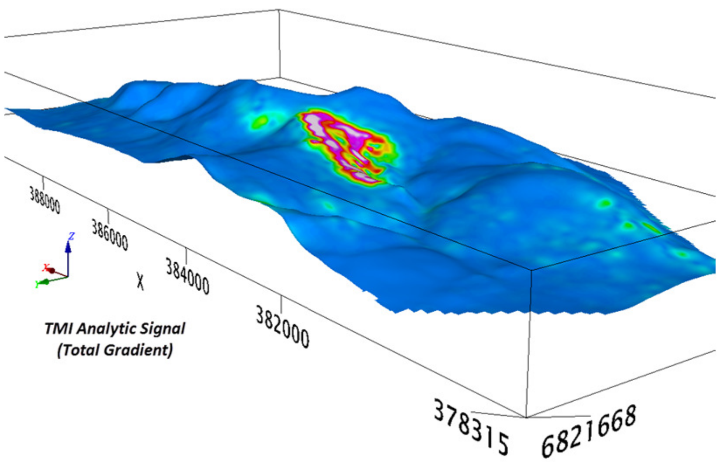
West Zone. At field station RH12004 looking north. Blast trench in fault zone in listwanite, note dip slope to right (east).

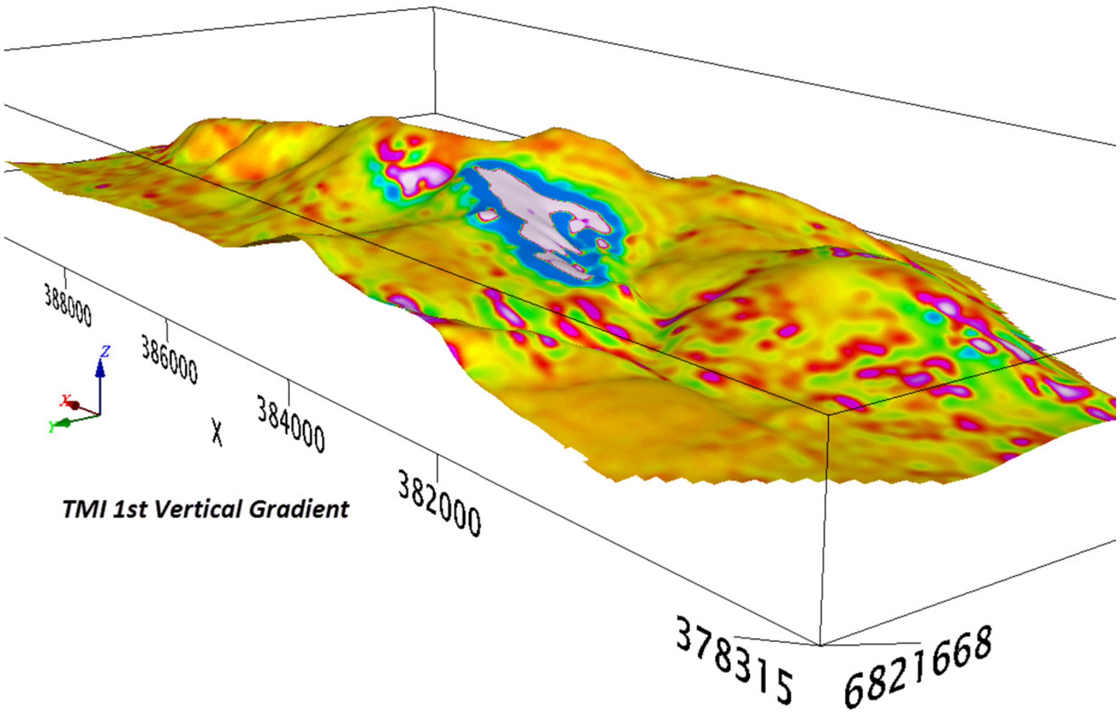
APPENDIX D

Rivier Heli-MAG Modeling Review

Rivier Heli-MAG Modelling Review

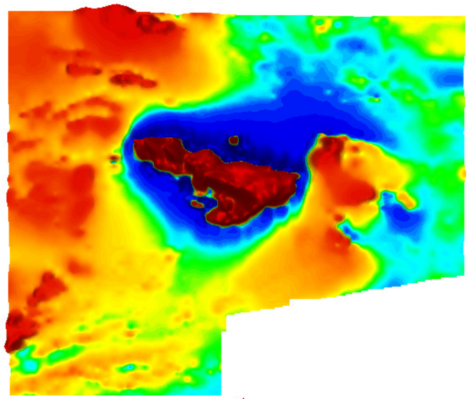


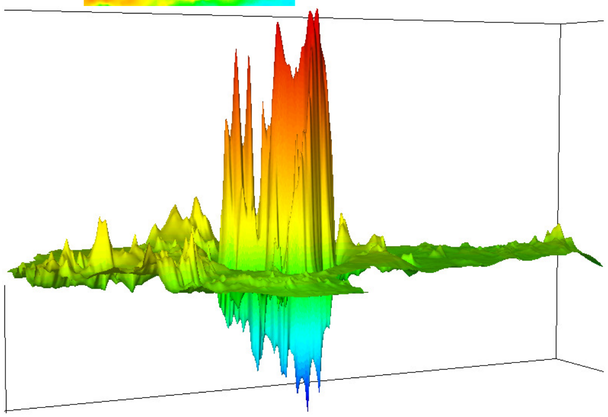


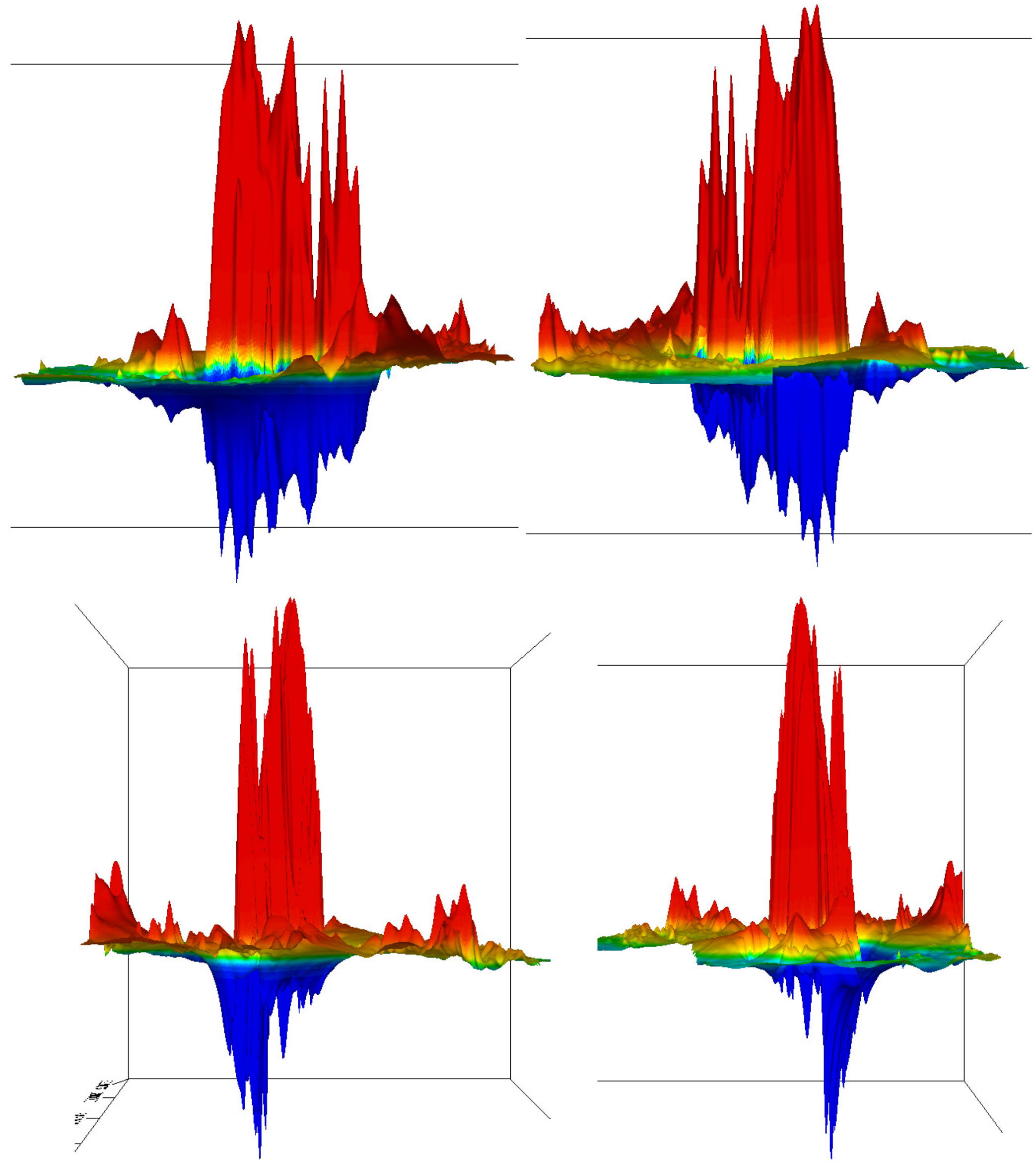


Rivier Heli-MAG Modelling Review

The Target Response







<u>Overview of the magnetic response:</u>

Above: looking down and linear colour with magnetic relief to illustrate how anomalous this response is to surrounding region.

UL: viewing from N to S

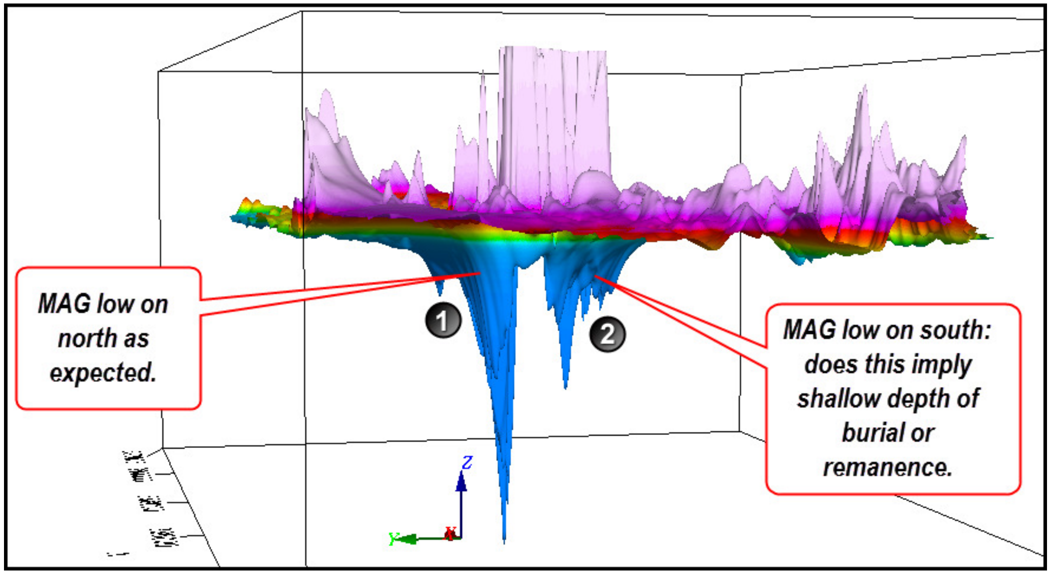
UR: viewing from S to N

LL: viewing from W to E

LR: viewing from E to W

Note the prominent magnetic low response.

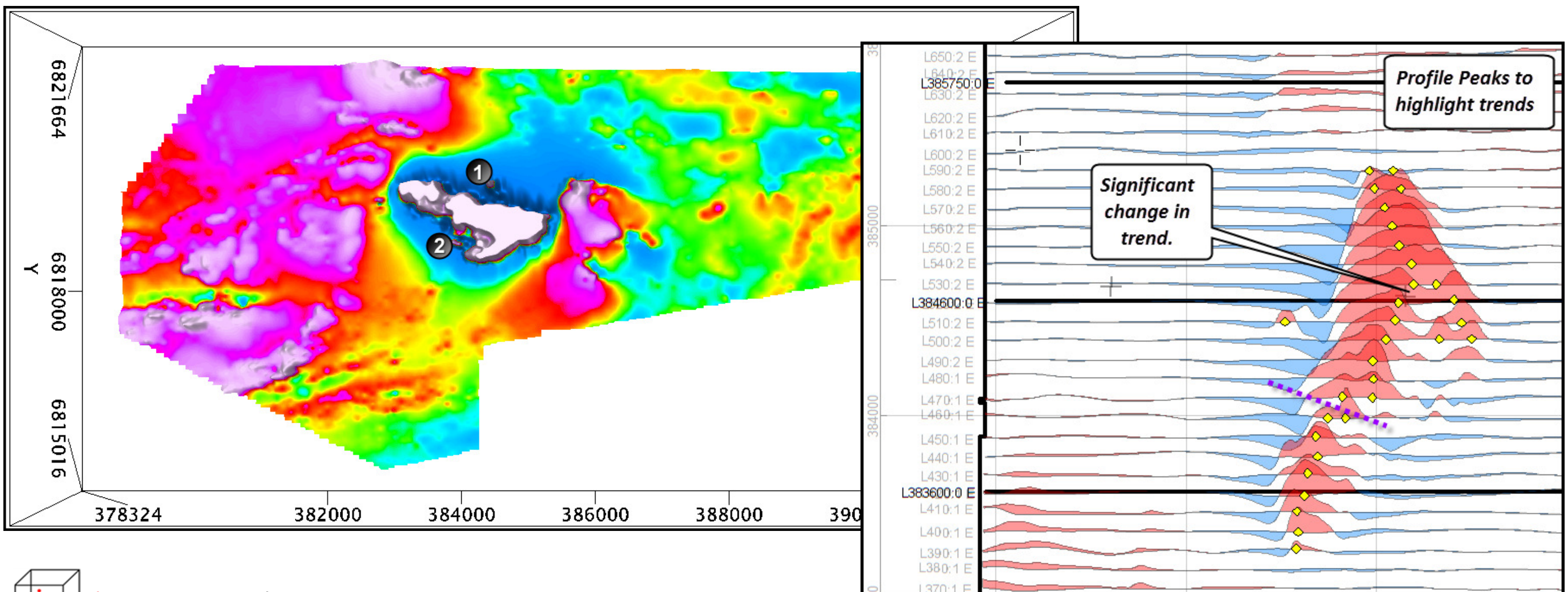
Rivier Heli-MAG Modelling Review



Prominent magnetic lows are located on NE and SW edges. Modelling suggests that this is due to the source being very near surface and the NE edge having a steep dip to the SW. Target of interest is said to outcrop.

2D & 3D modelling is in general agreement though the 3D models suggest deeper depth extent (this may be partially do to how 3D inversions work towards modelling to depth if possible because the naturally tendency to locate responses near surface. Modelling was more complicated that originally expected. This response has not been easily modelled in either 2D or 3D. The presence of magnetic remanence should be considered. Magnetic remanence is a rock property attribute, which if present complicates standard modelling practices.

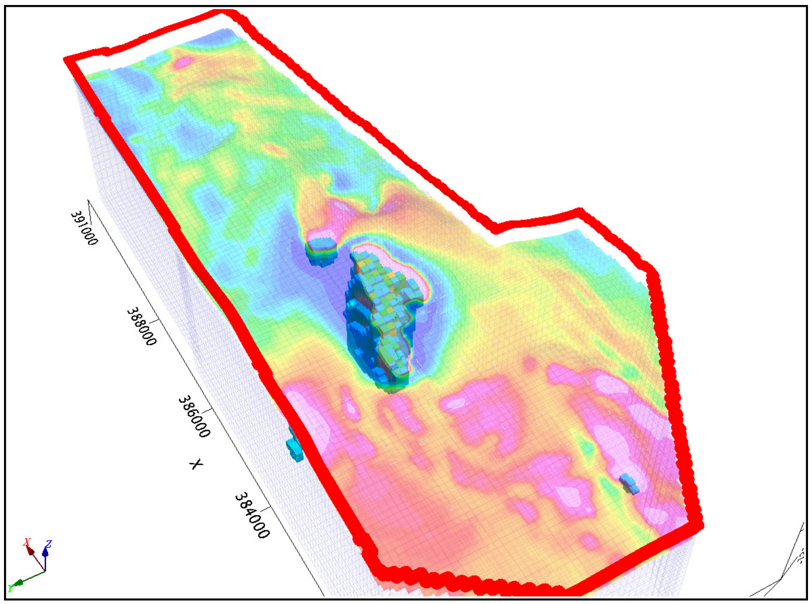
(Below) A basic mapping of response peaks from the TMI show the pattern in the image below indicating complexity within the overall response. Peaks from the vertical gradient would show further detail.

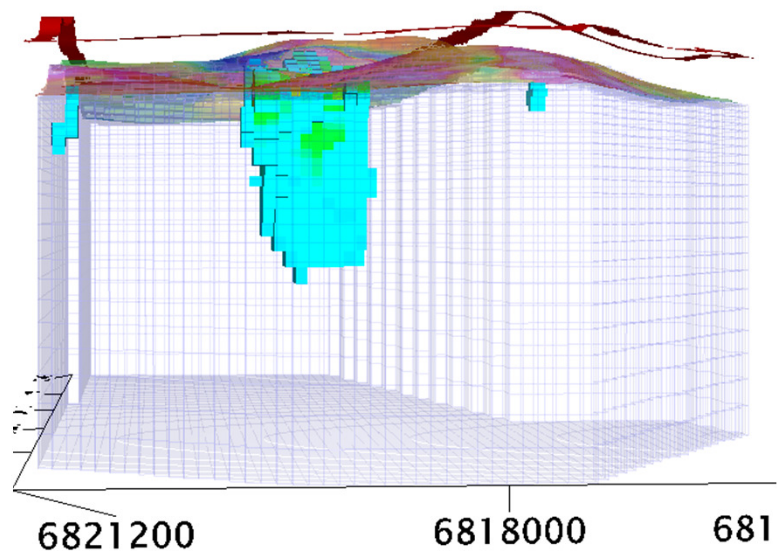


Rivier Heli-MAG Modelling Review

Magnetic inversion modelling involved the creation of a 3D volume of magnetic susceptibility which is produced by discretizing a volume into a matrix of cubes (referred to as a “mesh”) representing individual magnetic susceptibility values. The models are unconstrained (no constraints based on a priori information) using standard inversion parameters. Images below illustrates the 3D mesh volume which will be populated with a magnetic susceptibility values such that a forward magnetic model of the susceptibility distribution will reproduce the observed magnetic data (within a reasonable degree of fit). Three styles of inversion models were produced:

- Magnetic susceptibility (standard product assuming targets have little or no magnetic remanence effect) via MGinv3D & Geosoft Voxi.
- Magnetic susceptibility via VIAS (TMI filtered via Vertical Integral, then Analytic Signal is used as an approximation when magnetic remanence is a possibility and will produce an “work-around solution” for the susceptibility distribution).
- Magnetization Vector Intensity (MVI – provided via Geosoft Voxi modelling software).





Note that modelling of magnetic data is a non-unique process due to the nature of potential field theory: there is no single unique model that will explain all the data. The models provided in this review represent one possible scenario of magnetic susceptibility distribution (representative of the geology) and though the models may not represent a true distribution of magnetic susceptibility (data sampling density/quality, model cell size limitations and the nature of a smooth model inversion versus discrete boundary models) they are a useful tool and offer the ability to envision the subsurface in 3D. Model results should always be interpreted with respect to ‘reasonable’ geologic expectations with respect to geometry and characteristics of physical property distributions (in this case magnetic susceptibility) which relate to lithology and alteration (such as magnetic mineral enhancement or destruction). One must keep in mind that inversion model results are a three-dimensional representation of what could be causing the observed magnetic data. In areas where no geologic information is known to cross-reference with inversion models then the results should be used with an appropriate level of confidence. If the model fits well with the known geology or various aspects then one can increase the level of confidence that could be used in other areas where geologic information may be minimal.

Rivier Heli-MAG Modelling Review

3D inversion and 2D profile modelling will be summarized with observations.

This review focuses on north-south sections along 383,600 E, 384,600 E and 384,900 E for both 3D and 2D models. Modelling is a work in progress and not considered a complete project. The work has proceeded in a manner focusing on two objectives:

- Estimation of source geometry: depth limited vs. depth extensive?
- Fixed budget from which the work is prioritized towards the goal (*noting that it may be insufficient to fully assess or determine the primary objective).

Many inversion and forward models were created for this work. The amount of interpretation and documentation of observations was limited to the desired budget. Further value can be obtained from a more detailed geophysical interpretation of this data set and is recommended. Full QA/QC of the initial data and model results was not possible within the time constraints. A brief data review was conducted and it was decided to proceed as the data were sufficient for the primary task: which was the investigation of depth limited vs. extensive. 3D model results could have been optimized further, but it decided that at this point in the interpretation the results were sufficient for the task. This summary is not presented as an exhaustive case study of the magnetic data.

Magnetic remanence will be mentioned throughout this review. It is not confirmed that remanence is a factor at this stage. However, when interpreting magnetic data is important to keep the possibility of remanence a consideration. For example, the susceptibility model results from MGinv3D (there are similar aspects seen in the Voxi model, but less pronounced) are curious and prompt the question, “are these susceptibility distributions geologically feasible”. It is an odd response that should not be assumed to be realistic until further consideration is performed. Why do MGinv3D and Voxi susceptibility models differ noticeably? An initial gut feeling from looking at the sections is that the opposing dipping nature of the susceptibility responses is suggestive of remanence or simply artifacts of a very strong, near surface source. The two inversion codes are different and not expected to produce identical results.

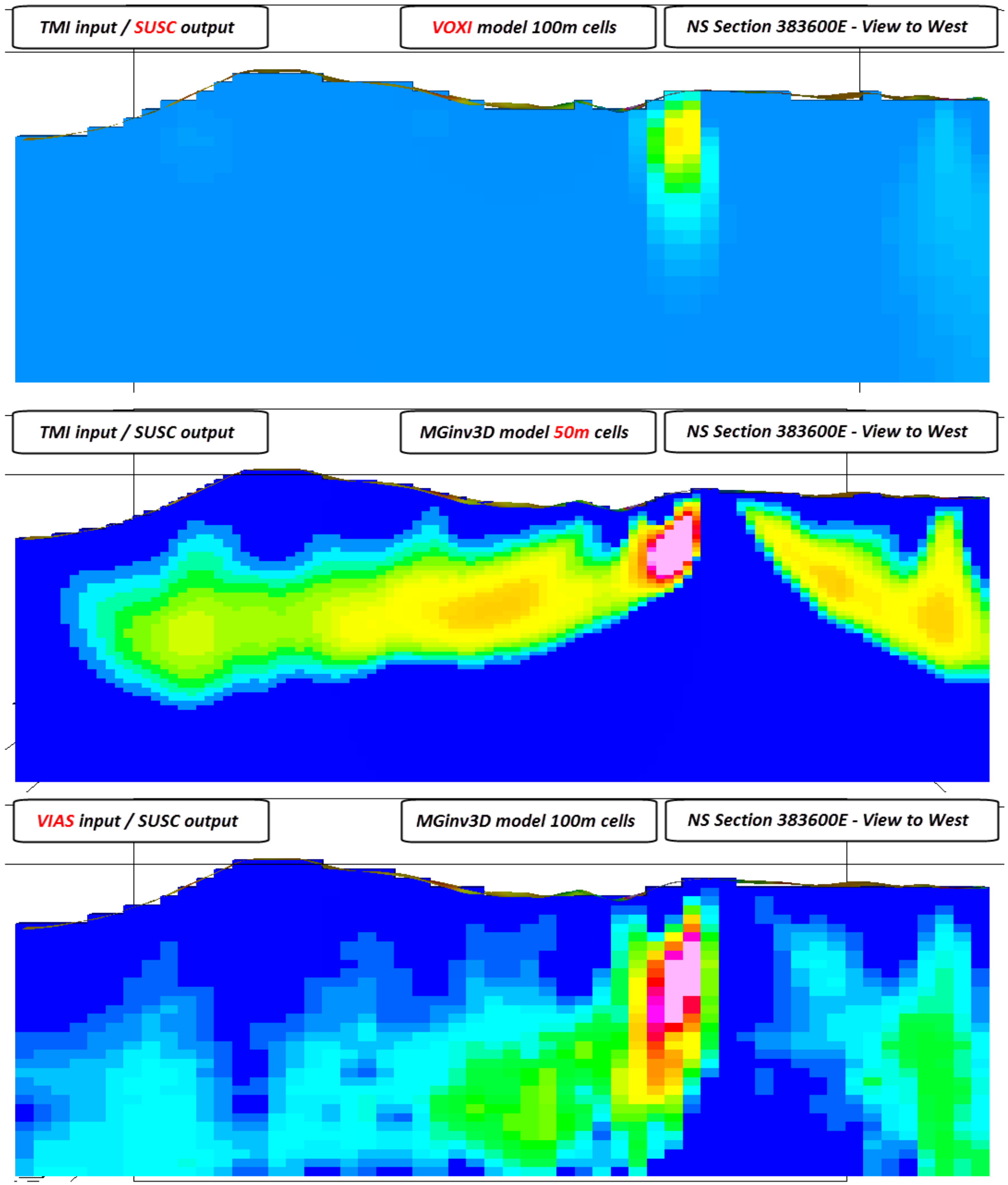
** 2D Profile modelling was performed based on the data being located 35 m above topography rather than the actual radar altimeter values.*

Rivier Heli-MAG Modelling Review – 383600E

Initial 3D model results comparing two inversion codes (MGinv3D & Geosoft Voxi) and inversion of a transformed TMI (total magnetic intensity) grid product VIAS are shown. Images are presented using a linear colour bar to a maximum of 0.150 SI units.

All models are in general agreement that it does not appear that the model source is expected to be depth extensive (*which also depends upon one's specific definition of shallow vs. deep). The Geosoft Voxi model tends to suggest greater depth extent though this can be interpreted in two ways. It is fairly standard that sharp boundaries are rare in this style of smooth model and therefore the weak response seen to depth would simply be related to this effect as well as an aspect of the inversion in which results are "encouraged" to depth rather than the natural tendency to occur closer to the surface. The sharper boundaries seen in the MGinv3D results are interesting, but should be viewed with caution given the 45° sloping response seen in the center image (MGinv3D) is reminiscent of the effect of magnetic remanence. For this reason the TMI data were transformed to VIAS (vertical integral performed first and then the analytic signal of the VI) and inverted for comparison (bottom image). Further modelling work is warranted though it would appear that the original purpose of this investigation, to ascertain whether the response is more likely caused by a depth limited versus a depth extensive source, is currently pointing towards depth limited and near surface.

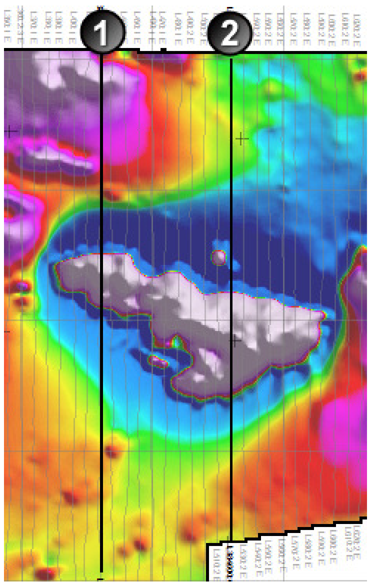
correspondence with the company that writes the MGinv3D inversion code indicated that the unexpected response pattern noted above has been observed for strongly magnetic bodies

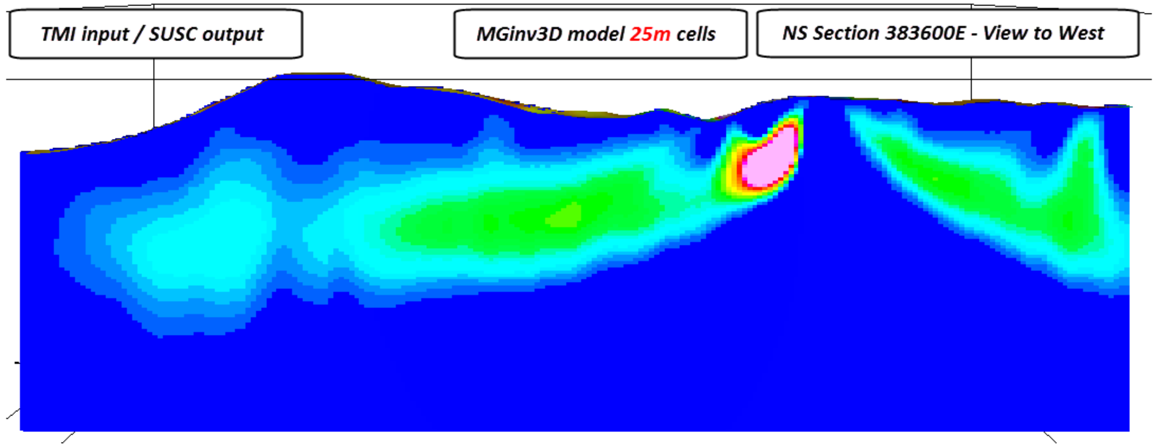


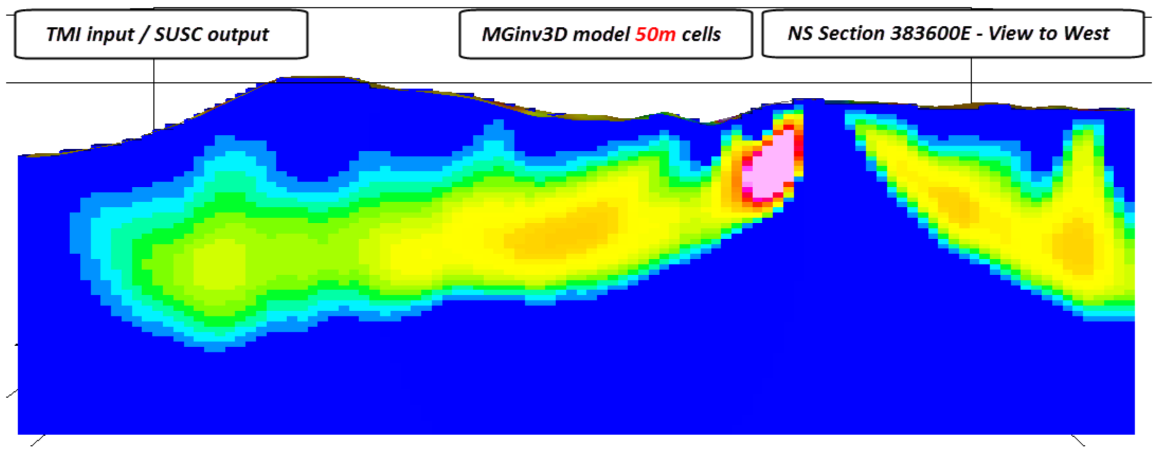
in3D Geoscience Inc.

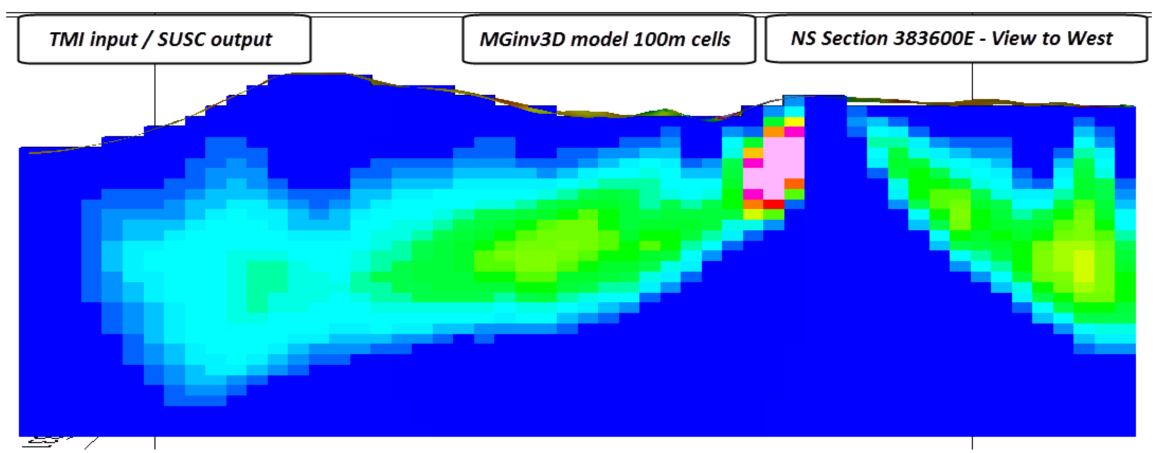
Rivier Heli-MAG Modelling Review

MGinv3D modelling results comparing model resolutions at 100 m, 50 m and 25 m cells. The location of line 383600 E is noted at point 1 in the image below. Point 2 is line 384600E.



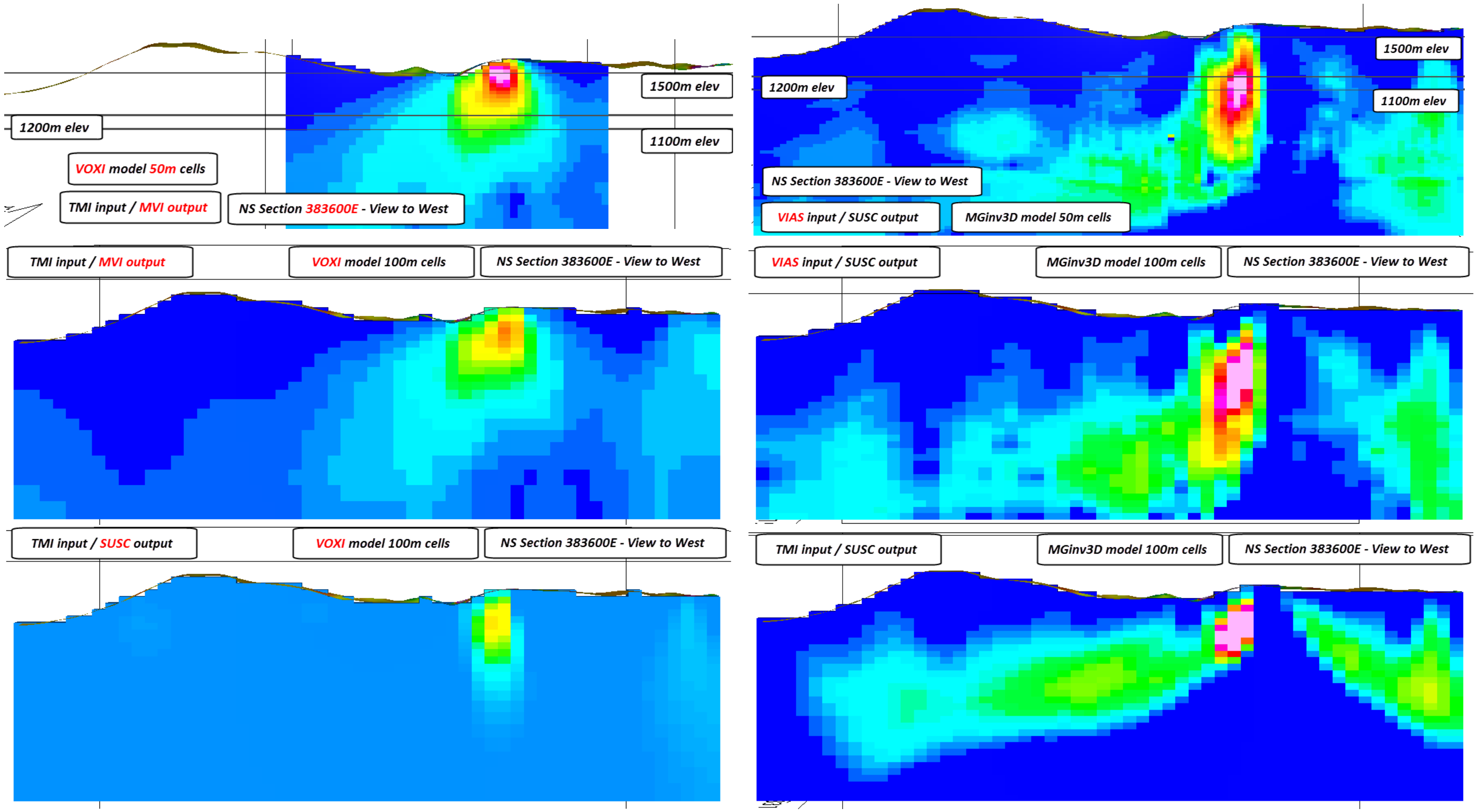






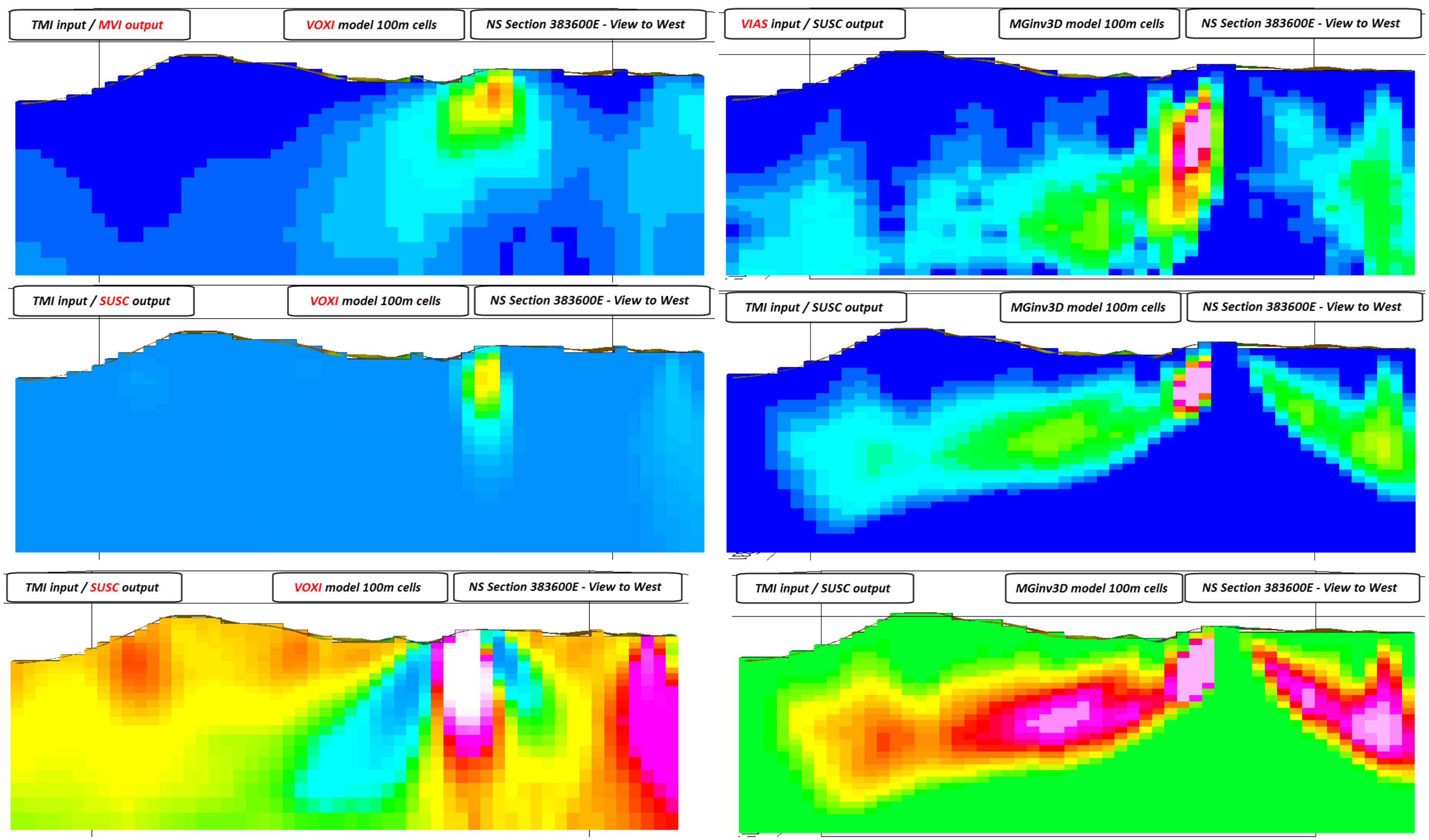
Rivier Heli-MAG Modelling Review – Susceptibility vs. Magnetization

Geosoft Voxi modelling was carried out using two methodologies: susceptibility & MVI (magnetization vector intensity). In the presence of magnetic remanence standard magnetic susceptibility inversions will not be correct as they are not able to handle a magnetic field direction different than the normal Earth's magnetic field. Magnetic inversion on data affected by magnetic remanence are currently a prominent topic in university research. There are few options available for commercial software applications. Approximation techniques such as VIAS/VRMI are possible as well as a recent development from Geosoft using MVI. Geosoft Voxi modelling allows one to calculate an MVI model for comparison to the standard susceptibility model. If strong remanent effects are present then these two models may differ significantly. Susceptibility models are presented below with Voxi on the left and MGinv3D on the right. The Voxi MVI model is shown upper left for 100m & 50m cells and the MGinv3D VIAS is shown upper right for 100m & 50m cells (the bottom row shows standard susceptibility models). MVI results are not allocating magnetization as deep as the VIAS results. Since modelling the VIAS is an approximation it may be more suitable to rely on the MVI results. Elevation depths are noted in the top section results.



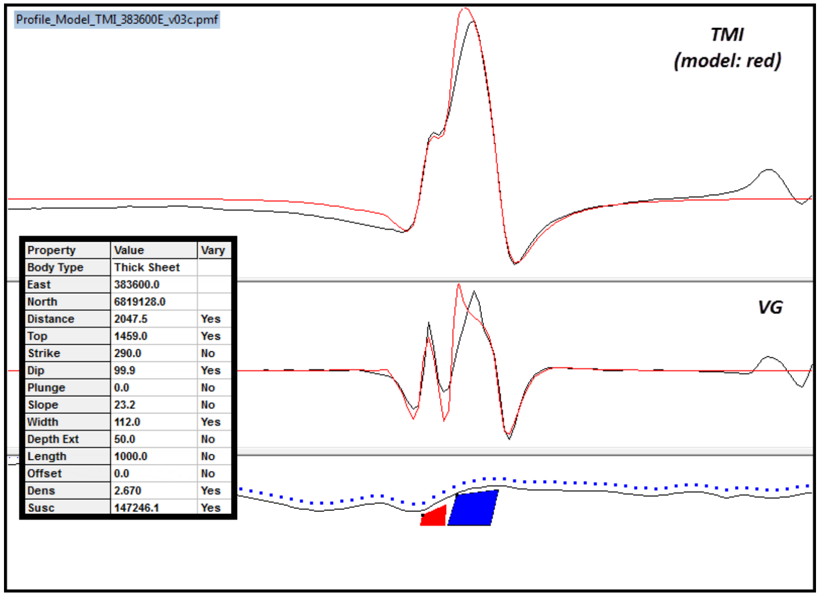
Rivier Heli-MAG Modelling Review – Section 383600 E

It is important when viewing the data results that one *study the effects of using different colour distributions*. The bottom row images are the same as the middle row except that the colour bar is based on a normal distribution rather than linear. This brings quite a noticeable change in the Voxi susceptibility model (LL). The susceptibility low "lobes" off either side of the high may not be geologically realistic and could be an artifact: sources of which could be magnetic remanence effects or an artifact due to a near-surface strongly magnetic body*. Note that there is a clear difference between the susceptibility models of Voxi and MGinv3D. *The comment regarding modelling responses from very strongly magnetic sources is from recent correspondence with Scientific Computing and Applications writes the MGinv3D inversion code.



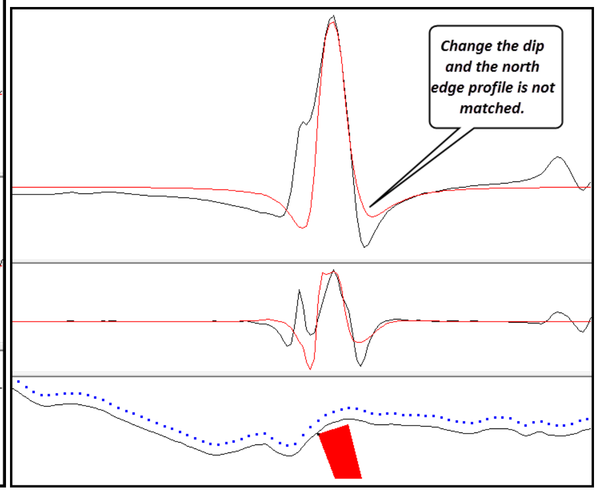
Rivier Heli-MAG Modelling Review - Section 383600 E

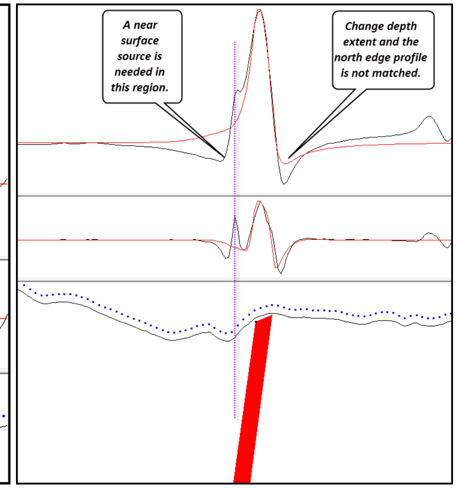
Profile Modelling experimentation for 383600E. The more that is known about a target in terms of its location and geometry the better we can model the data; when parameters can be fixed with reasonable confidence it allows for refinement of the unknown parameters. In general it can be difficult for profile modeling from simple shapes to fully create observed responses. The vertical depth scale in the bottom panels has been exaggerated in some of the figures in order to be able to see the location of the bodies with respect to the near surface.

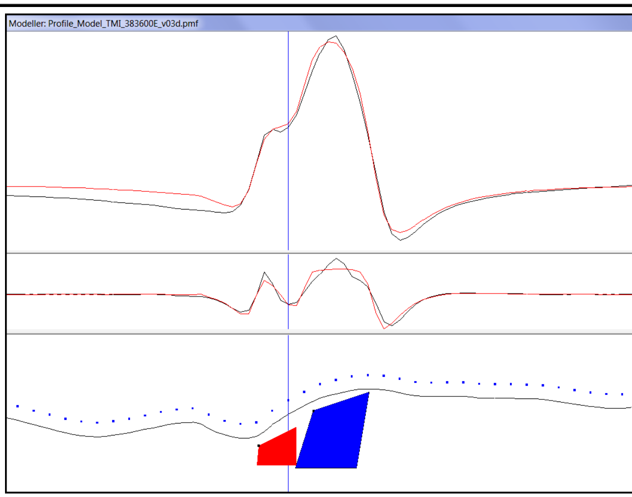


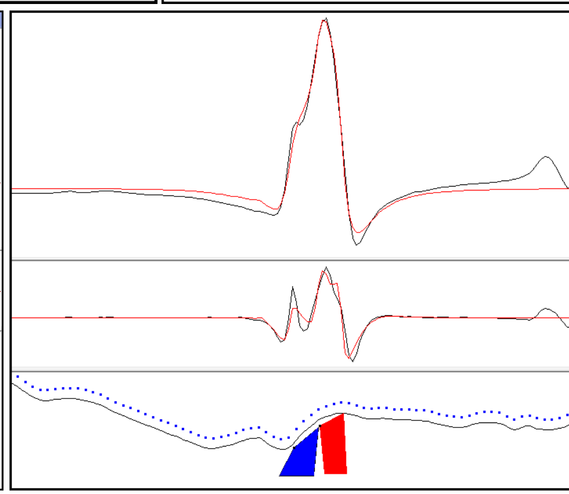
Property	Value	Vary
Body Type	Thick Sheet	
East	383600.0	
North	6819128.0	
Distance	2047.5	Yes
Top	1459.0	Yes
Strike	290.0	No
Dip	99.9	Yes
Plunge	0.0	No
Slope	23.2	No
Width	112.0	Yes
Depth Ext	50.0	No
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	147246.1	Yes

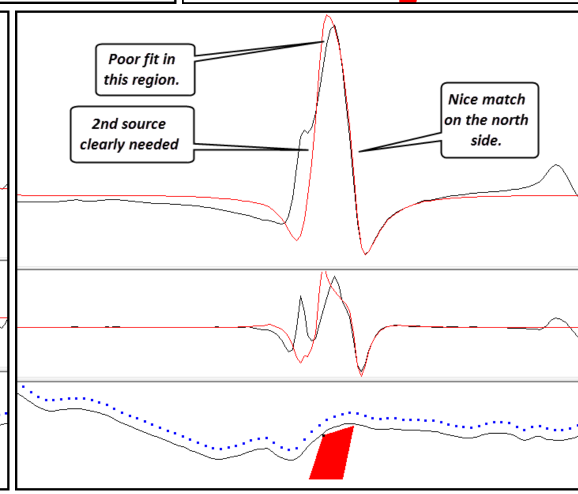
These images show various response patterns for different target shapes and depth extents. Notes indicate various aspects about the modelling process.











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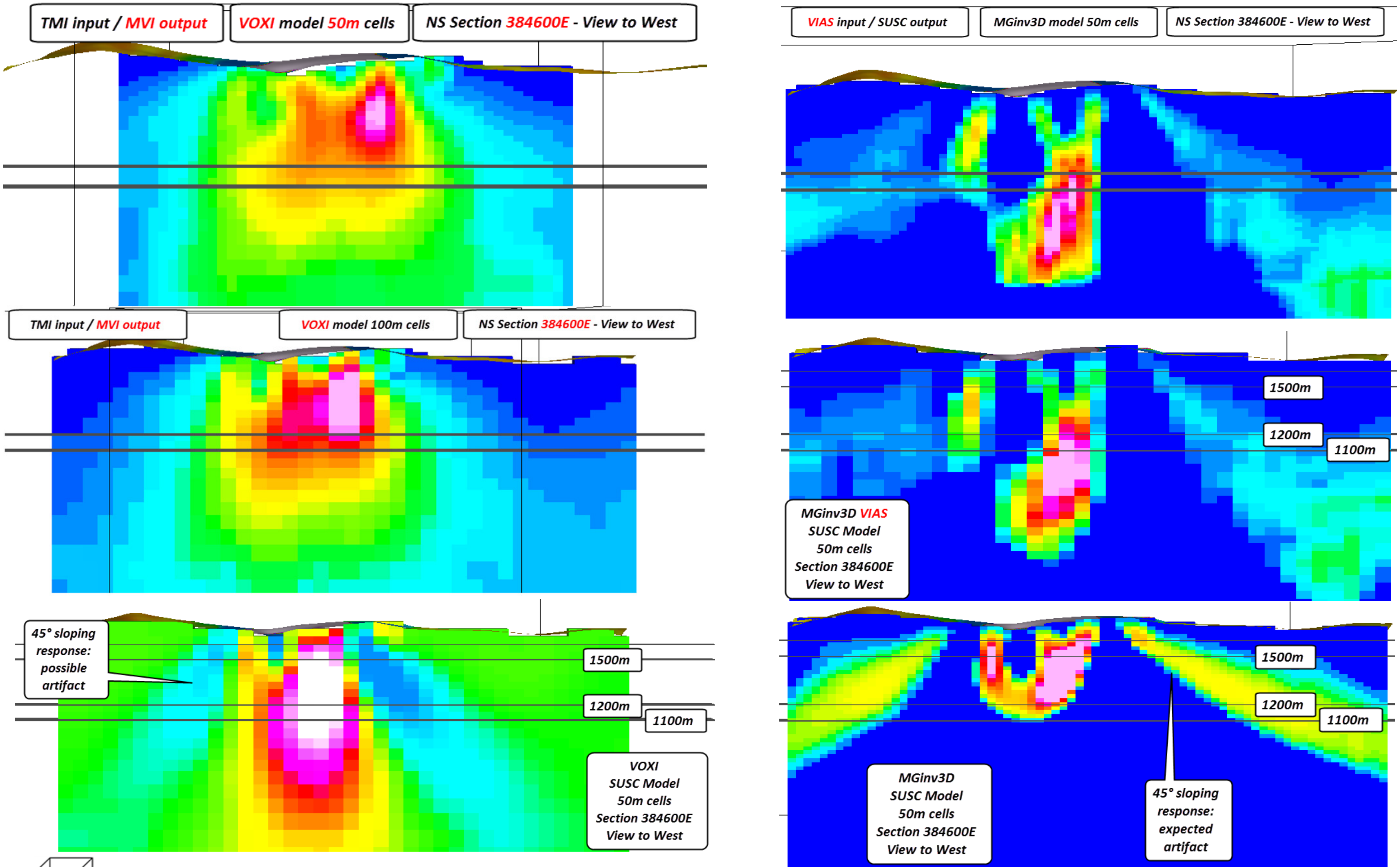
Rivier Heli-MAG Modelling Review – Section 384600 E

Modelling assuming remanence, left is Voxi MVI and right is VIAS (via WinDisp). For comparison the bottom images are of the standard susceptibility models plotted using a non-linear scale. Depth is indicated in the upper images by lines at 1200m and 1100m. The elevation surface is approximately 1600m at the main response.



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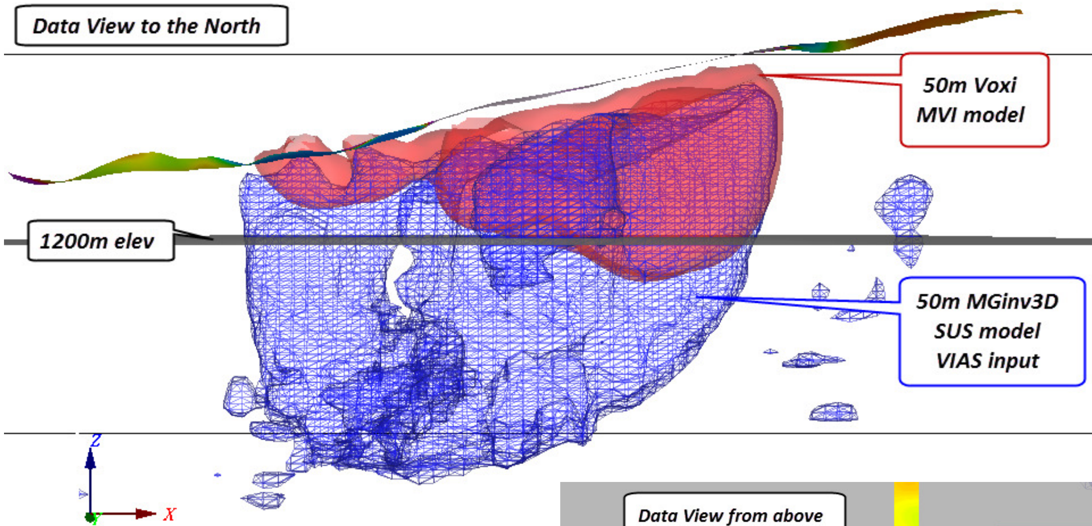
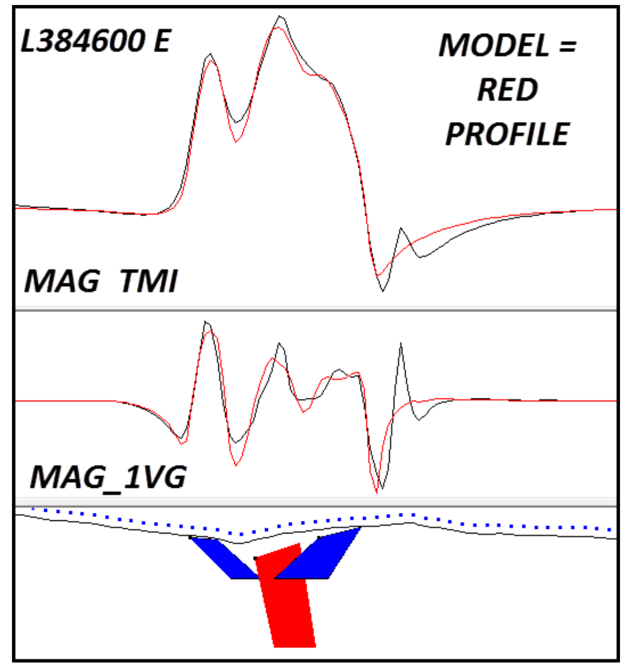
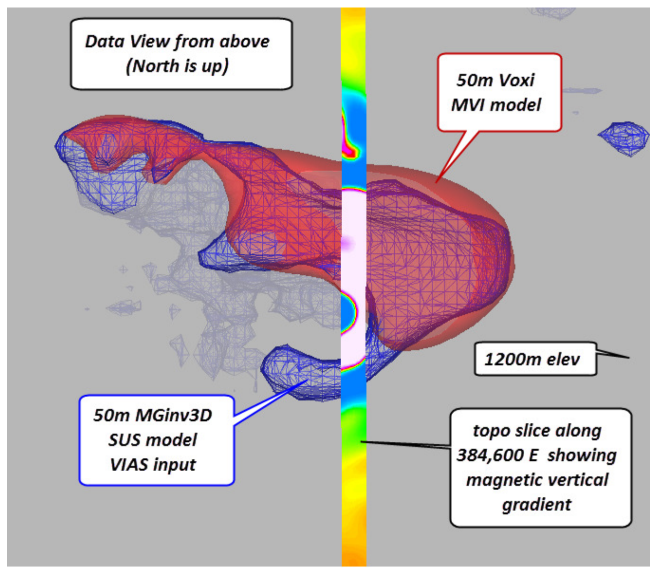
Rivier Heli-MAG Modelling Review – Section 384600 E (L520)



A possible scenario … but further work needed at the sources overlap and have differing mag susc values, but it does illustrate the complexity and that there are 3 prominent sources. In this result the 3 bodies were inverted simultaneously. No further tweaking of the results was performed.



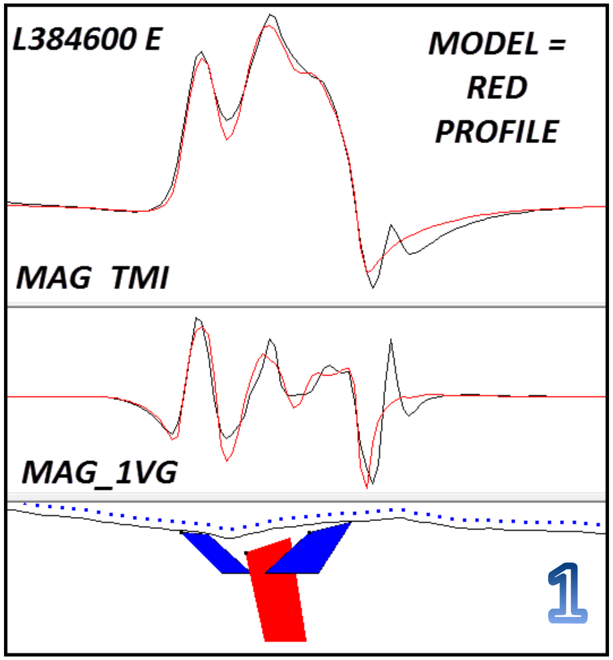
A comparison of 50 m inversion models for Voxi MVI (red 0.04 isosurface) and MGinv3D susceptibility (blue 0.085 isosurface) from VIAS input. Models do not represent the same units. The theory behind these two model types is quite different and therefore not an ideal comparison. Voxi MVI is a magnetization vector intensity versus the MGinv3D susceptibility result which used the VIAS grid and a magnetic field inclination of 90° and declination 0° (as opposed to the expected 77.6° inclination and 22.5° declination for this location).

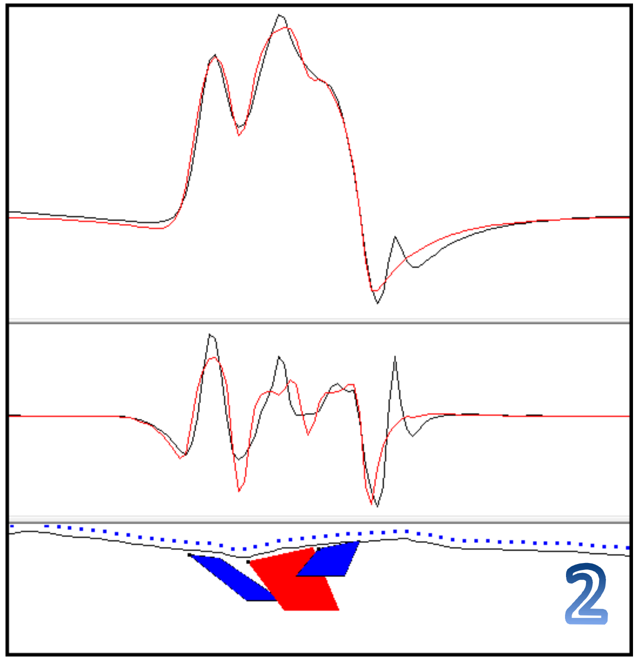


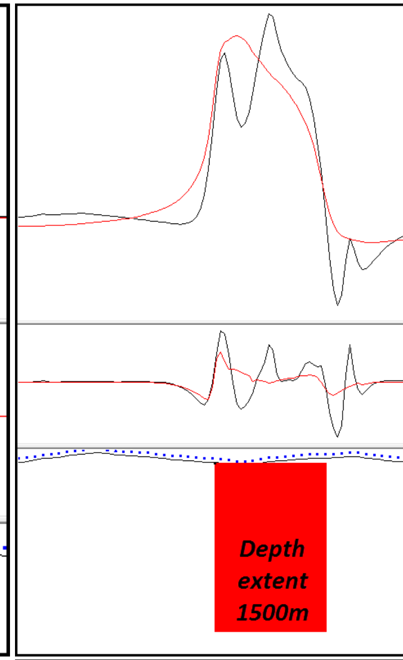
Profile modelling seems reasonably able to fit the data given normal magnetization, but 3D inversion model results suggest they may be issues with remanence.

The VIAS-based susceptibility model is allocating noticeably more response at depth. Because this type of modelling is performed when standard TMI susceptibility inversion is thought to be affected by magnetic remanence, it may be more suitable to rely upon the Voxi MVI results as a first pass for planning follow-up activities.

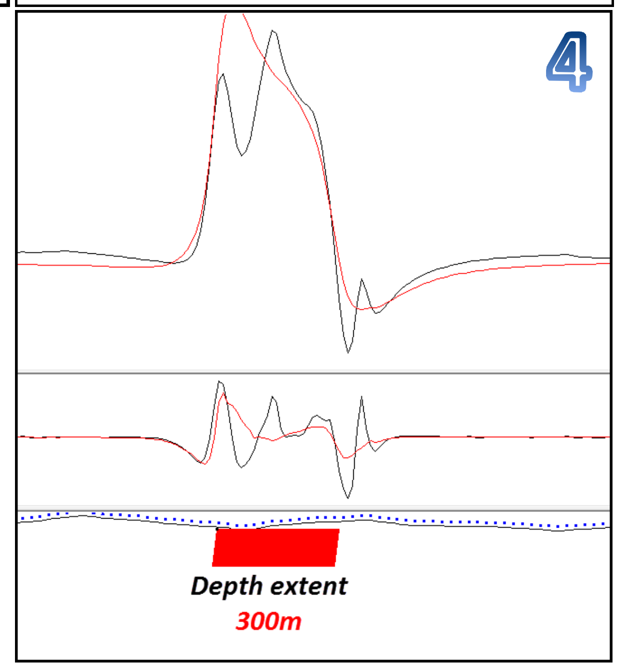
Rivier Heli-MAG Modelling Review – Section 384600 E (L520)







Property	Value	Vary
Body Type	Thick Sheet	
East	384600.0	
North	6818540.0	
Distance	1214.5	Yes
Top	1691.9	Yes
Strike	275.0	No
Dip	90	Yes
Plunge	0.0	No
Slope	0	Yes
Width	685.6	Yes
Depth Ext	1500	Yes
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	61687.4	Yes
Rem J	0.0	No
Rem I	0.0	No
Rem D	0.0	No

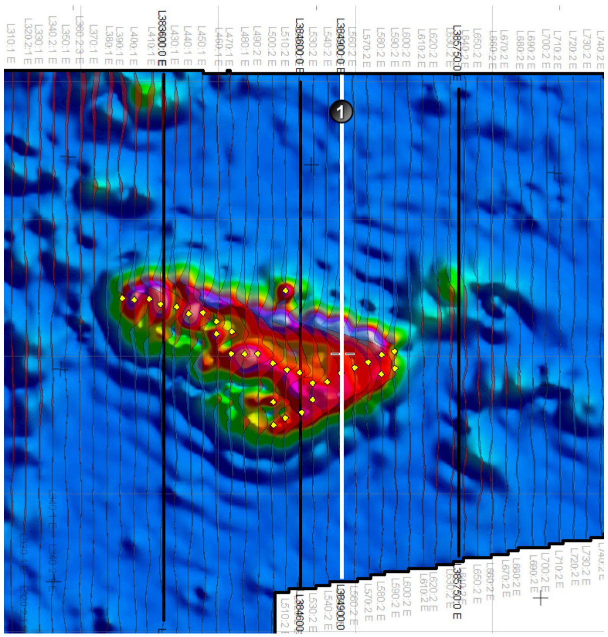


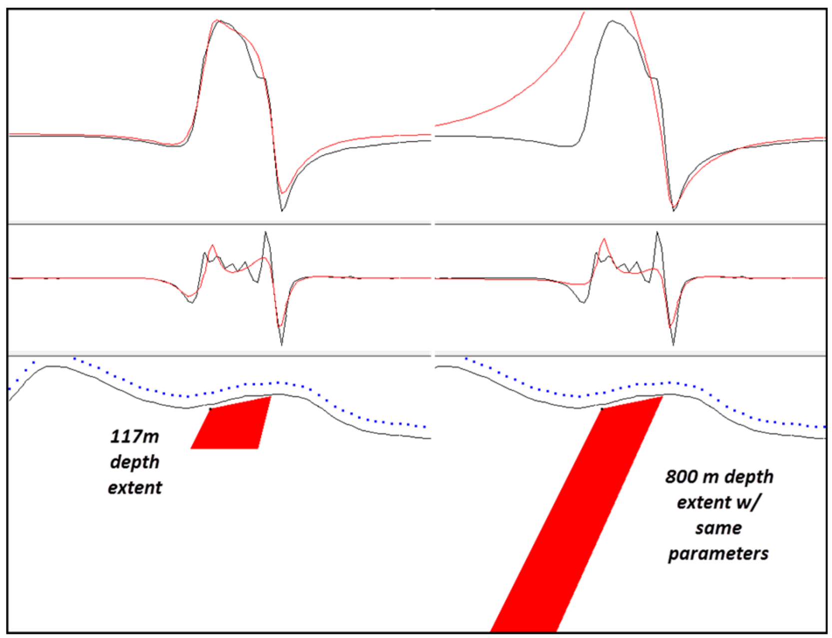
Various model scenarios and example responses. Models 1 & 2 are attempts to model the observed response which generally corresponds with depth limited sources. These models are just a few of numerous different combinations of magnetic susceptibility strength, geometry and depth of burial. It is possible that greater depth extent could be modelled given the time to experiment. Models 3 & 4 are simple representations meant to illustrate the differences between depth limited and depth extensive sources. In model 3 the edges of the model cannot be fit properly due to the contributions to the magnetic response from the source extending to depth. Model 4 illustrates how a depth limited source provides a better fit at the anomaly edges; it is not meant to fit the overall response properly.

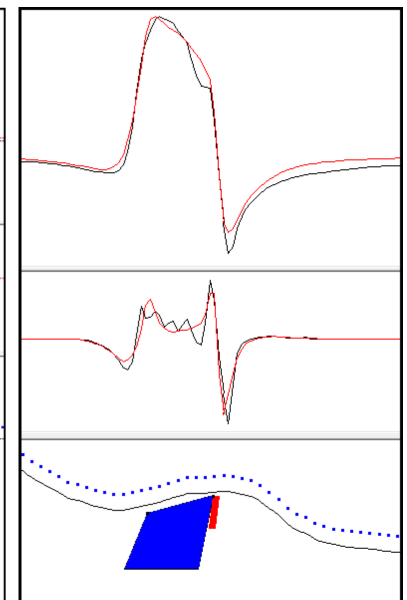
Rivier Heli-MAG Modelling Review – Section 384900 E

The upper panel of the profile modelling represents the TMI data and the middle panel is the vertical gradient of the TMI. The gridded data image left of the profiles is the TMI analytic signal (or Total Gradient).

2D profile magnetic modelling was performed along NS line 384900 E on the eastern margin of the magnetic anomaly. A simple block was used to model the response reasonably well suggesting a limited depth extent. The same model was then extended to 800 m depth and the resulting model profile in red shown for comparison with the original data in black. It clearly fits the right side of the observed data well, but does not fit the left side. Experimentation like this can be useful in studying individual edges of sources to fine tune an interpretation; the objective is definition of a specific area of the source rather than the overall response. The model response on the right included a small stronger magnetic feature in order to improve upon the fit with the observed data in the middle vertical gradient panel. It is clear in the top panel TMI response that there is a second, narrow feature associated with the larger one.

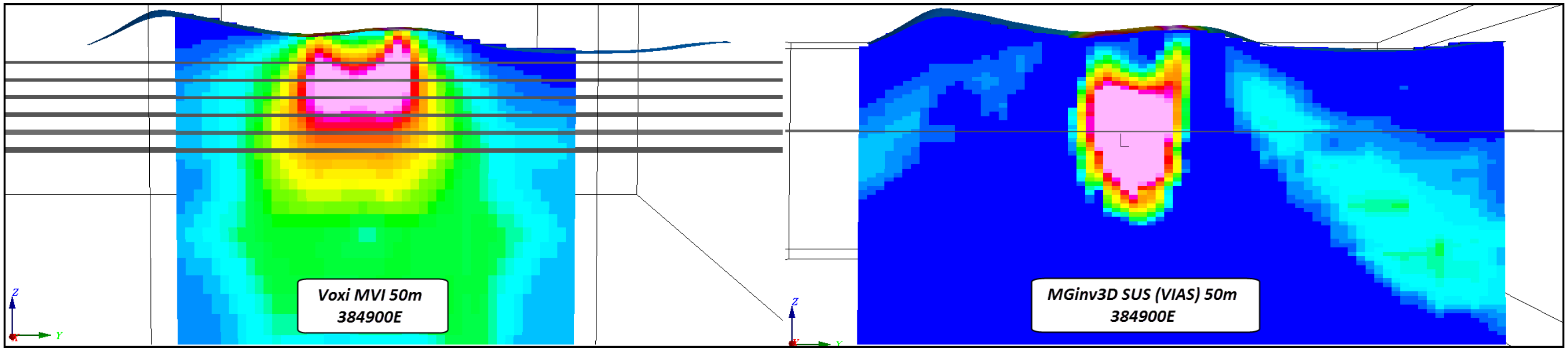






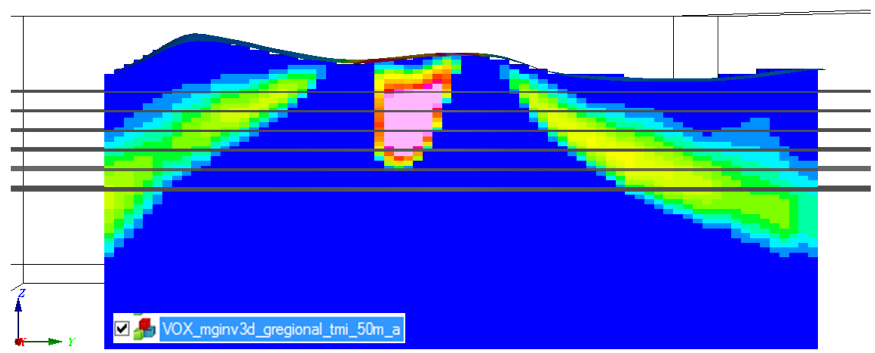
Rivier Heli-MAG Modelling Review – Section 384900 E

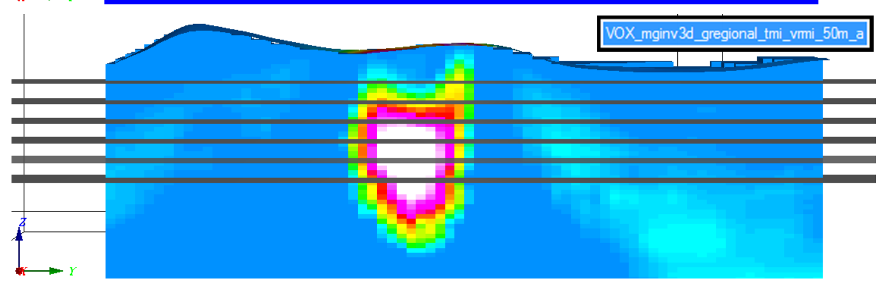
Sections through the 3D inversions are shown below. The NS sections are viewing to the west with north to the right. Elevation marker lines are 1600m to 1100m and in the VIAS model the elevation marker is at 1200m for reference. The inversion model results suggest a deeper depth extent than indicated in the 2D profile modelling. The Geosoft MVI model may be the result to go with given that it is a commercial product as opposed to the VIAS model which is known to be an approximation and primarily only used when the magnetic remanence is a possibility. The MVI response begins to weaken with depth around the 1300 m level which is in agreement with the standard susceptibility model from MGinv3D.



Modelling is suggestive of a depth limited nature, however, this may still represent a significant depth of 300 to 400 m in places. There is also the nature of this style of 3D modelling whereby a source may extend deeper than the model is capable of allocating strong susceptibility.

The definition of depth limited likely needs to be defined with respect to the known geology and target type. For example, a geologist may consider 100 m depth limited and that 400 m is effectively depth extensive for the purposes of a specific target with respect to designing a drill program.

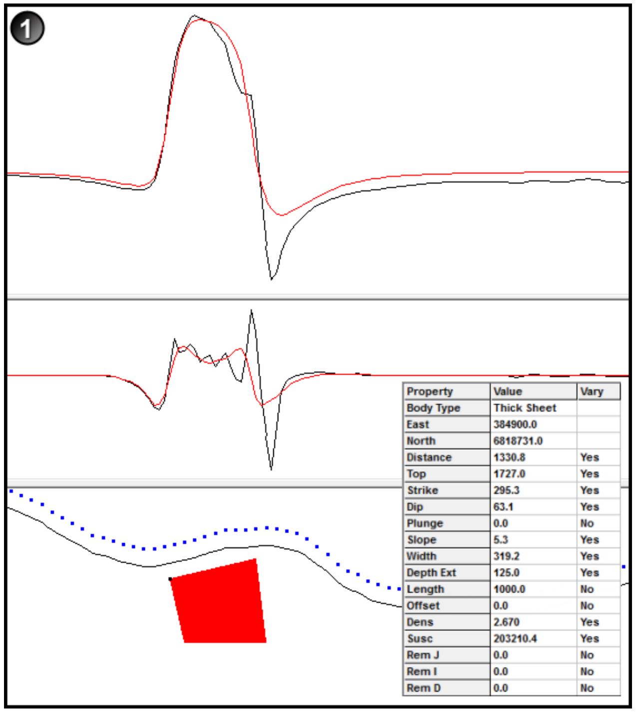




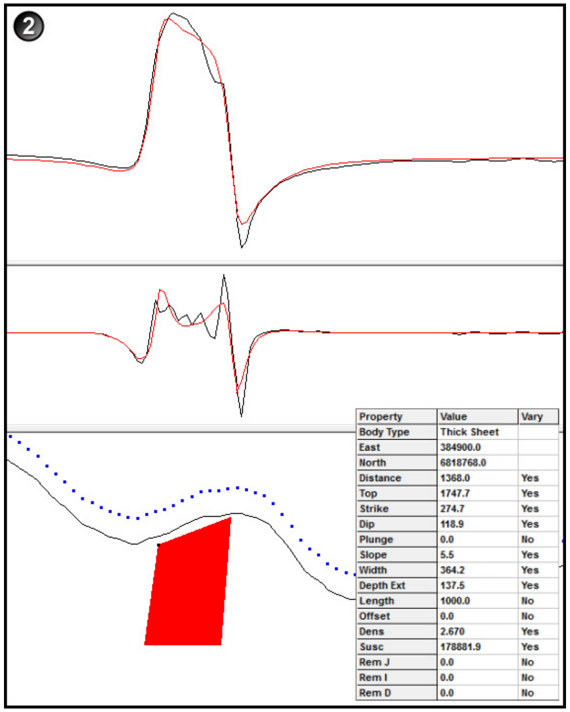
* Additional model based on filtered TMI data representing VRMI (vector residual magnetic intensity) which is a similar presentation to that of VIAS.

Rivier Heli-MAG Modelling Review – Section 384900 E

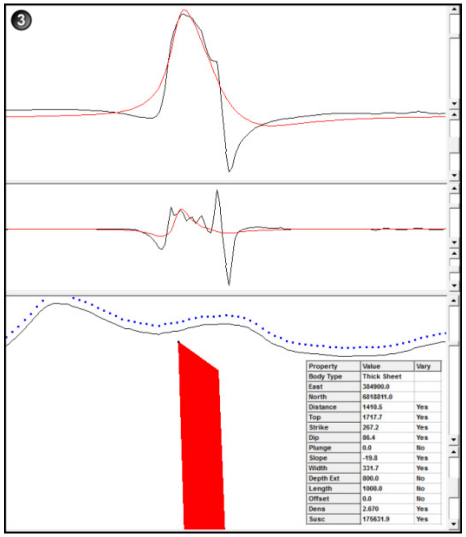
Additional profile models for section 384900 E illustrating how subtle differences in source geometry, depth and magnetic susceptibility change the model response shown in red. The vertical scale in the bottom panels has been <u>exaggerated</u> in order to show detail near the surface. Each model was generated using the inversion option. The right side image was produced from a starting model of the middle image where the depth extent was set to 800 m and not allowed to vary during the inversion. It is clear the resulting model does not fit the black data profile. A second depth extensive model was created using a flat top and positioned as close to the surface as possible. This model source is not capable of reproducing the edges of the observed response.



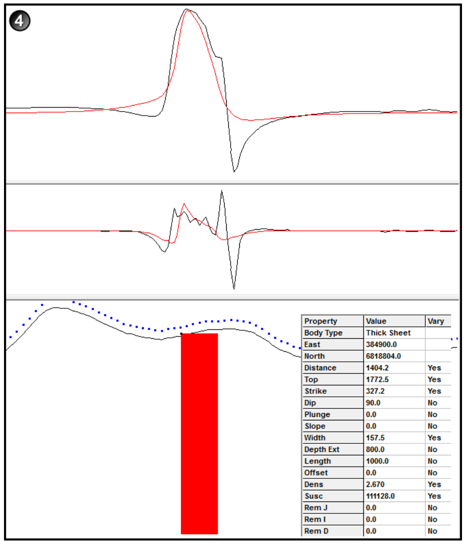
Property	Value	Vary
Body Type	Thick Sheet	
East	384900.0	
North	6818731.0	
Distance	1330.8	Yes
Top	1727.0	Yes
Strike	295.3	Yes
Dip	63.1	Yes
Plunge	0.0	No
Slope	5.3	Yes
Width	319.2	Yes
Depth Ext	125.0	Yes
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	203210.4	Yes
Rem J	0.0	No
Rem I	0.0	No
Rem D	0.0	No



Property	Value	Vary
Body Type	Thick Sheet	
East	384900.0	
North	6818768.0	
Distance	1368.0	Yes
Top	1747.7	Yes
Strike	274.7	Yes
Dip	118.9	Yes
Plunge	0.0	No
Slope	5.5	Yes
Width	364.2	Yes
Depth Ext	137.5	Yes
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	178881.9	Yes
Rem J	0.0	No
Rem I	0.0	No
Rem D	0.0	No



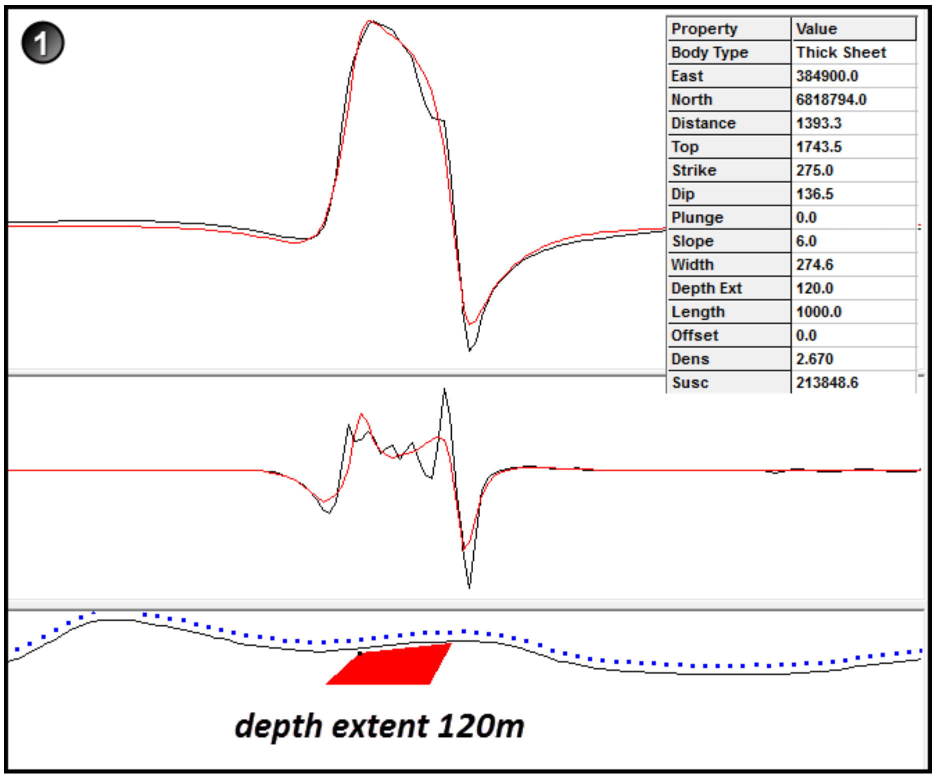
Property	Value	Vary
Body Type	Thick Sheet	
East	384900.0	
North	6818811.0	
Distance	1410.5	Yes
Top	1717.7	Yes
Strike	267.2	Yes
Dip	86.4	Yes
Plunge	0.0	No
Slope	-19.8	Yes
Width	331.7	Yes
Depth Ext	800.0	No
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	175631.9	Yes

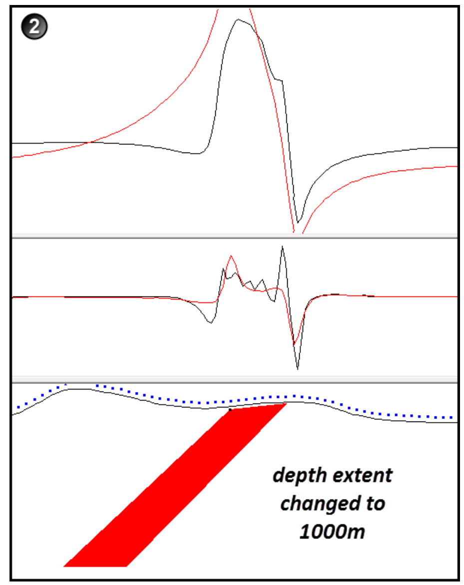


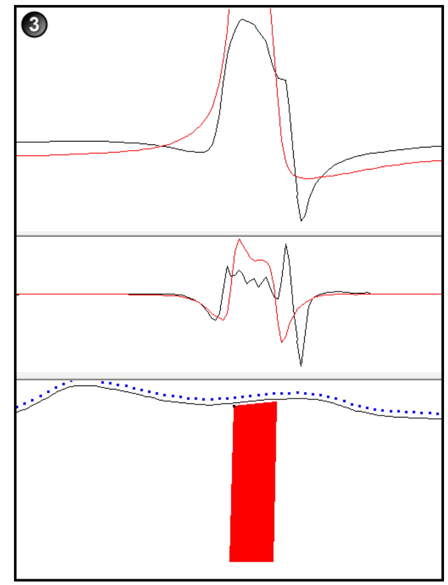
Property	Value	Vary
Body Type	Thick Sheet	
East	384900.0	
North	6818804.0	
Distance	1404.2	Yes
Top	1772.5	Yes
Strike	327.2	Yes
Dip	90.0	No
Plunge	0.0	No
Slope	0.0	No
Width	157.5	Yes
Depth Ext	800.0	No
Length	1000.0	No
Offset	0.0	No
Dens	2.670	Yes
Susc	111128.0	Yes
Rem J	0.0	No
Rem I	0.0	No
Rem D	0.0	No

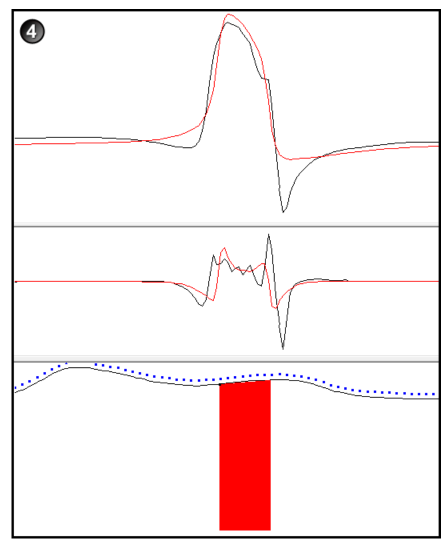
Rivier Heli-MAG Modelling Review – Section 384900 E

Models #2 & 3 use the same parameters as model #1, but the depth extent is set to 1000 m. The resulting model profile (red) does not fit the data (black). In order to fit the data the source geometry and magnetic susceptibility need to be altered. In order to best fit the data given a depth extensive source of the width, dip, depth to top and susceptibility were altered in model #4, which still does not fit the prominent side lobes. 2D profile modelling suggests a source at this location as a depth limited. 3D inversion models suggest a deeper depth extent.







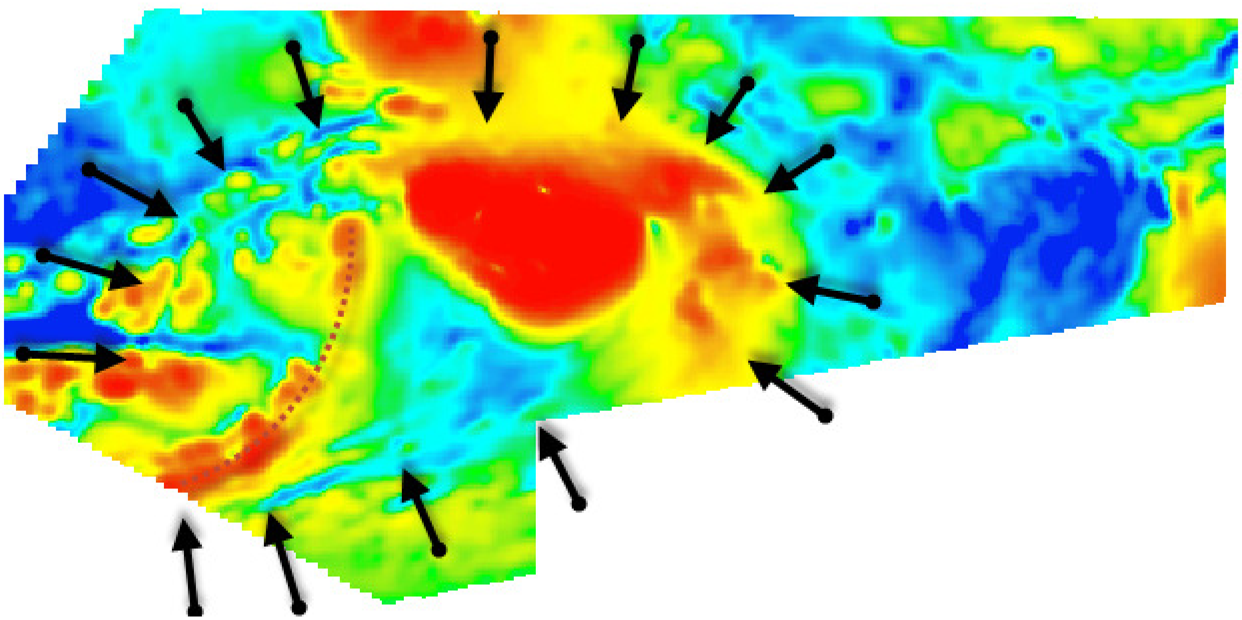


Profile modelling is an interesting exercise as it allows one see how a response changes when only altering one parameter such as a depth extent. For this particular line profile modelling cannot fit the observed data with a depth extensive source. Bear in mind that the source used is extremely simplistic and it is expected that the actual geology (magnetic susceptibility distribution) is far more complex and variable in its geometry.

Rivier Heli-MAG Modelling Review

An interesting aside:

Is there an elliptical pattern in the VIAS grid as depicted by the black arrows?



Rivier Heli-MAG Modelling Review

Observations & Recommendations

- 2D profile modeling is indicating shallower depth extents than the 3D modelling. It may therefore be prudent for drill planning that a limited depth extent be considered for the initial hole. Drilling information feedback will then help direct subsequent drill holes. The subsequent drill holes can be planned in advance, but one should consider depth limited versus extensive scenarios.
- Target looks to be a depth limited source.
- The very strong, near surface magnetic response may be causing artifacts in the 3D inversion modelling.
- Further information can be interpreted from the magnetic data (as briefly noted in the previous slide). The work performed so far was focused on the task of understanding the depth extent of the magnetic source.
- The primary purpose of this modeling review was to determine whether the source of this magnetic anomaly was depth limited or depth extensive. There is potentially a case for both, but this depends upon one's definition of how deep "depth limited" is with respect to the type of target envisioned..
- Conceptual geologic model should be compared with current modelling results. This could help direct scenarios for refinement of future modeling in both 3D and 2D.
- The issue of magnetic remanence is difficult to assess in a quick review of the data. There are indications from the inversion models that are suggestive of remanence, however, the 2D profile modelling has proceeded well assuming no remanence. There is also the possibility that the suspicious 3D inversion responses could be due to a difficulty in handling this very strong, near surface magnetic response. If this same response was located deeper it may not have the same response pattern. This could be tested through upward continuation of the magnetic data 50 m or 100 m and new inversions performed.
- It would be useful to present the geochemical data in a 3D presentation draped over topography with respect to the inversion modelling. A 3D data compilation would be beneficial for planning and visualizing proposed drill holes.
- Understanding more about the conceptual target model and how the geochemical data are related will help to determine if further magnetic modelling is warranted. Current magnetic models were unconstrained. It may be possible to implement constraints into the modelling that could refine the interpretation.

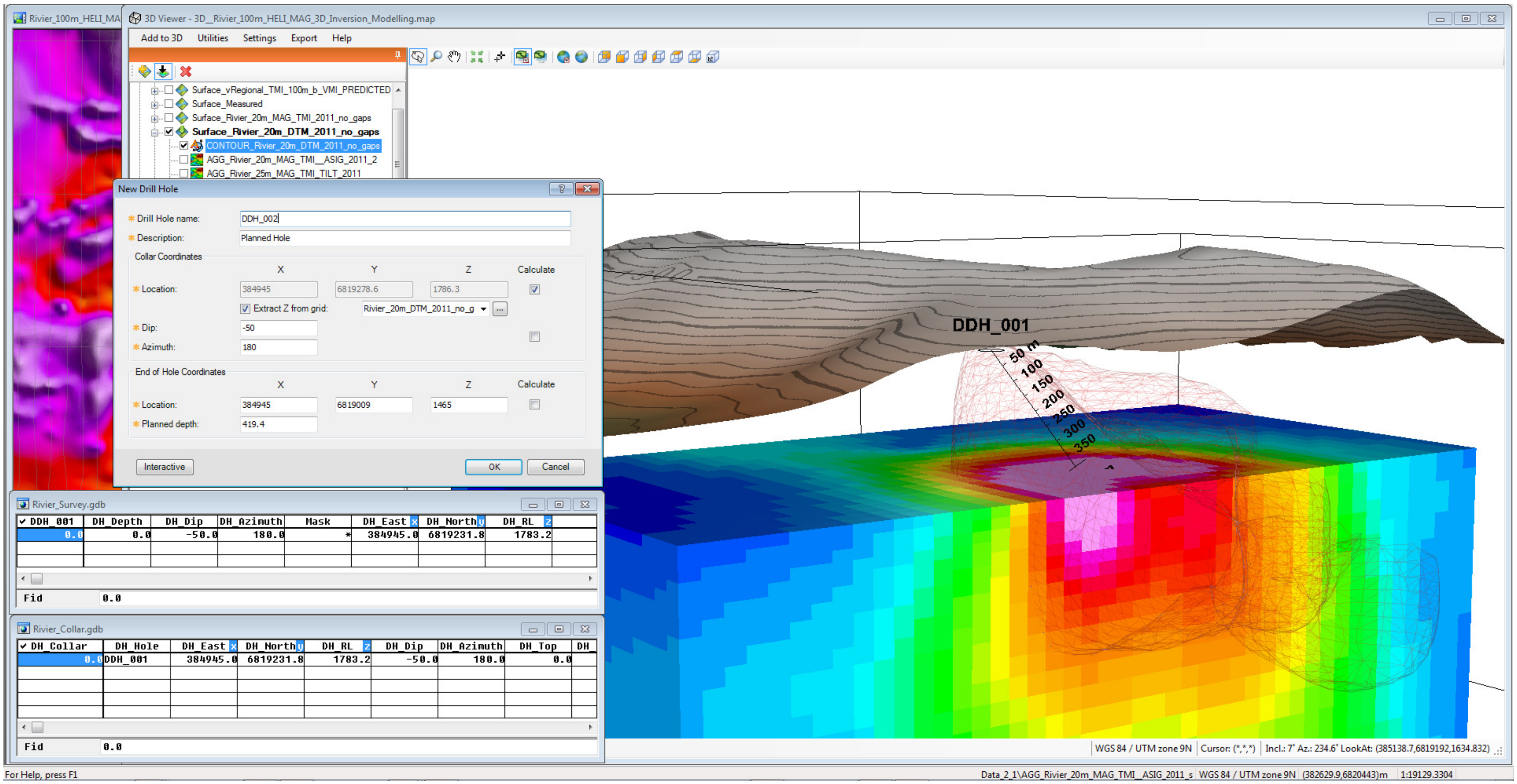
Todd Ballantyne, P. Geo.

17 December 2012

Rivier Heli-MAG Modelling Review

Drill Hole Planning in 3D – Options for further work

An example hole was created to illustrate how drill hole preparation could be performed using a 3D data compilation.



Rivier Heli-MAG Modelling Review

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