BRITISH COLUMBIA
The Best Place on Earth

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

BC Geological Survey
Assessment Report
38306

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Compilation and Analysis of Geophysical and Geochemic **TOTAL COST:** $6,200.00

AUTHOR(S): Frederick A. Cook **SIGNATURE(S):** Frederick A. Cook Digitally signed by Frederick A. Cook DN: cn=Frederick A. Cook, o, ou, email=fcook@ucalgary.ca, c=CA Date: 2019.06.07 12:06:53 -07'00'

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): **YEAR OF WORK:** 2019

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): Event 5734113: Dates March 8-13, 2019

PROPERTY NAME: Lady Slipper

CLAIM NAME(S) (on which the work was done): Lady Slipper 01-15 (Title No. 1037318), Lady Slipper 02-15 (Title No. 1066459)

COMMODITIES SOUGHT: Precious metals, massive sulphides

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Ft. Steele **NTS/BCGS:** 082F

LATITUDE: 49 ° 11 ' 31 " **LONGITUDE:** 115 ° 58 ' 59 " **(at centre of work)**

OWNER(S):
1) D. E. LaVoie 2)

MAILING ADDRESS:
2290 DeWolfe Ave.
Kimberley, BC V1A1P5

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

MAILING ADDRESS:

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Metasedimentary rock; Proterozoic; Middle Aldridge Formation, sedex deposits

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: AR30087; AR19957; AR30232; AR36269; AR26318; AR17633; AR18152

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic	Re-interpret	all	$400.00
Other	Graphics		$400.00
Airborne	NRCan data base	all	$1600.00
GEOCHEMICAL (number of samples analysed for...)			
Soil	168 samples re-analysed, digitised and re-plotted	1027318	$800.00
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other	Report		$3,000.00
		TOTAL COST:	$6,200.00

Assessment Report:

Compilation and Analyses of Geophysical and Geochemical Data on the Lady Slipper Property, Southeastern British Columbia

MTO event 5734113

Approximate centre of property:
North 49° 11' 31"; West 115° 58' 59"
UTM Zone 11 574100E, 5449350N

NTS map sheet 082G

Fort Steele Mining Division

by

F. A. Cook, Ph.D., P.Geo.
Salt Spring Imaging, Ltd.
128 Trincomali Heights
Salt Spring Island, B.C.

Property Owner:

D. E. Lavoie
2290 DeWolfe Ave.
Kimberley, B.C. V1A1P5

May, 2019

Table of Contents

Table

Figures

Appendices

1.0 Summary

The purpose of this report is to describe the compilation and analyses of geophysical and geochemical data on, and in the vicinity of, the Lady Slipper property southwest of Moyie, British Columbia. The geochemical data were acquired as a grid of soil samples in 1999 but were digitized and re-plotted here so that the results could be compared with geological features. The geophysical data consists of regional magnetic data available from Natural Resources Canada and seismic reflection profiles recorded during hydrocarbon exploration in the 1980s.

2.0 Introduction and Terms of Reference

2.1 Introduction and Objectives

The purpose of this report is to describe results of integrating a variety of geophysical and geological data in and near the Lady Slipper property the region approximately 15 km southwest of Moyie, British Columbia (Figure 1).

The area has been a focus of exploration activities for many decades, largely because it is near the Sullivan mine (about 50 km to the northeast of the property), because the area has similar rocks to those of the Sullivan deposit, including exposed (meta-) sedimentary and igneous rocks of the Mesoproterozoic Middle and Lower Aldridge Formations, and because a number of strong showings with elevated Cu, Pb, and Zn have been found in veins at and near the surface. The most important known deposit in the vicinity is the closed St. Eugene mine that produced more than $6x10^6$ ounces of silver, 2.76×10^3 ounces of Au, $113x10^6$ kg of Pb and $14.5x10^6$ kg of Zn.

This report is a description of geological and geophysical analyses undertaken in 2019.

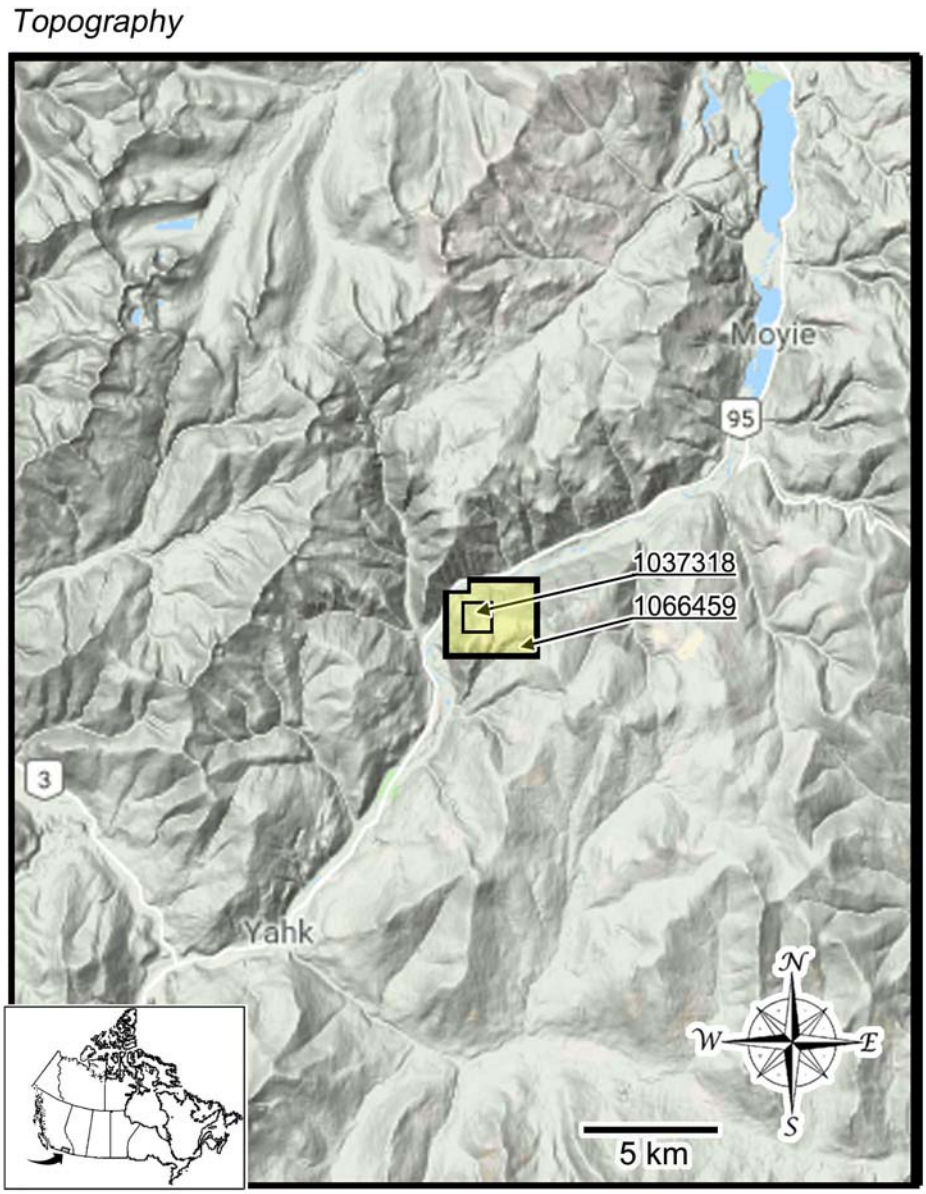


Figure 1. Topographic image of the area south of Moyie with the two Lady Slipper tenures indicated in yellow.

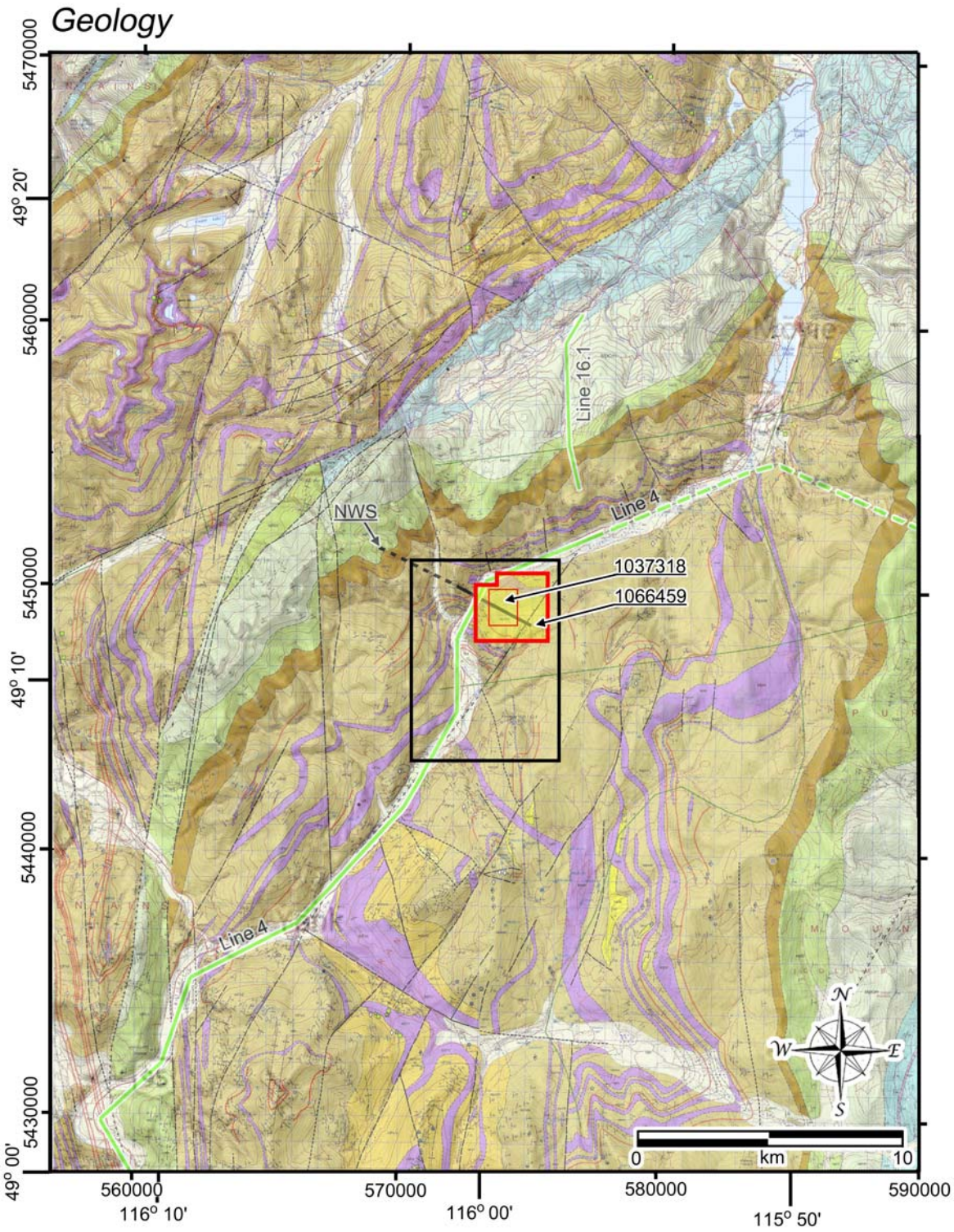


Figure 2a. Geological map Moyie anticline in Canada (modified from Brown et al. 2011). The location of the Lady Slipper property is outlined in red and the area outlined in black is enlarged in Figure 4. The green lines labeled with 'Line 4' and "Line 16.1" are the locations of two seismic profiles discussed in the text. The label 'NWS' refers to a northwest oriented structure interpreted by Anderson (2008).

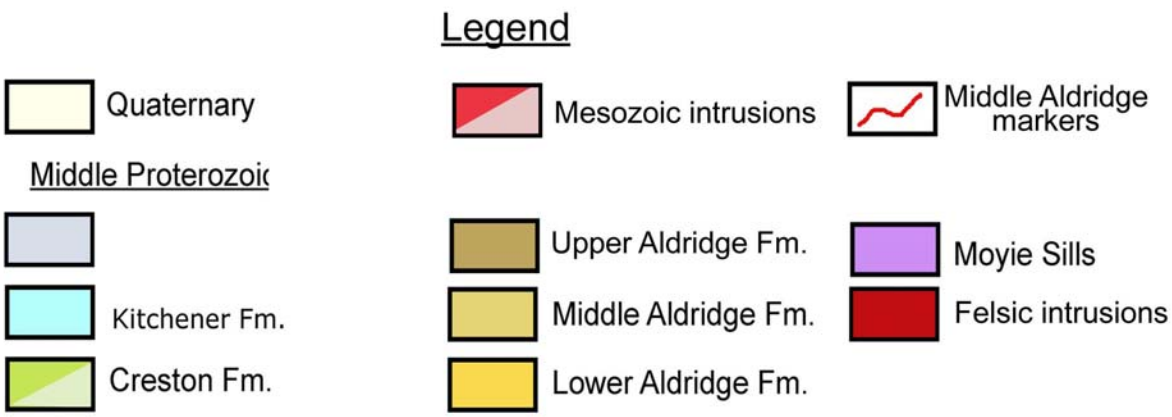


Figure 2b. Legend for the rock units in Figure 2a.

2.2 Terms of Reference

Included in this report are a description of the general geological setting of the Property, a description and analysis of geochemical data and results, an interpretation and reinterpretation of geological and geophysical relationships, and an evaluation of the merits of the relevant parts of the property. Reports reviewed by the author are listed in the reference section at the end of this report.

The author is familiar with the geology and geophysics of the region, having been responsible for acquiring geophysical data in British Columbia since 1983 and as the transect leader for the Lithoprobe Southern Canadian Cordillera transect from 1985-1995 and Transect co-leader for the Lithoprobe Slave-Northern Cordillera transect from 1995-2005.

All measurement units used in this report are metric. The coordinate system in use on the Property and on all maps is UTM zone 11 (NAD83).

3.0 Mineral Tenure Description and Location

The Lady Slipper property is located in southeastern British Columbia approximately 15 km southwest of Moyie, BC (Figures 1 and 2). The property consists of two mineral tenure containing approximately 971.10 hectares (Table I). The mineral cell titles were acquired online and as such there are no posts or lines marking the location of the property on the ground. The claims are owned by D. Lavoie of Kimberley, BC.

Table 1: Description of the Lady Slipper mineral titles.

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days For-ward	Area in Ha	Applied Work Value	Sub-mission Fee
1037318	LADY SLIPPER 01-15	2015/JUL/14	2019/MAR/14	2021/Feb/05	694	84.44	$ 1841.55	$ 0.00
1066459	LADY SLIPPER 02-19	2019/FEB/12	2020/FEB/12	2021/Feb/05	359	886.66	$ 4348.51	$ 0.00

4.0 Accessibility and Physiography

The Lady Slipper property is a rectangular block of cells that are located along BC Highway 3 southwest of Moyie Lake (Figures 1 and 2). Primary access is available from the BC highway 3 (Figures 1 and 2) south of the Moyie Lakes up old logging roads starting at Sunrise Creek then following the Stormy Creek road.

In this area, the terrain is mountainous with elevation differences of as much as 1000m from the Moyie River valley to the higher elevations.

5.0 Exploration History

The area in the vicinity of the property has been prospected since the Sullivan deposit was found and subsequently exploited. In addition, the nearby St. Eugene mine (at Moyie) provides evidence that potential for additional deposits exists in this area.

The specific area of the Lady Slipper claims has been included previously in large claim blocks (e.g., Stoney Creek property - Pirie 1988a, 1988b, Baxter, 1990; Cruz claims - Kennedy et al. 1999, Pighin, 2000, Hoy. 2008; JCD property - Anderson, 2008 and now the Lady Slipper property – Kennedy, 2016). Each of these efforts has found indications of metals in outcrops and soils.

6.0 Geological Setting

The area of this study is in the central part of the Purcell anticlinorium in Canada southwest of Moyie, B. C. (Figure 2). The Purcell anticlinorium in this area can be subdivided into three major blocks that are separated from one another by transverse contractional faults. The lowest structural panel is the Moyie block that is dominated by the Moyie anticline, a doubly-plunging structure that plunges to the northeast in Canada and to the southeast in Montana (Figure 2). In Canada, its western and northern boundary is the Moyie fault, an east/southeast verging transverse contractional structure with a minimum of 8-10 km of displacement. The St. Mary block is delineated on the southeast by the Moyie fault and on the northwest by the St. Mary fault. The northern most block in this area is the Hall Lake block, which is located in the hangingwall of the St. Mary's fault and the footwall of the Hall Lake fault. The Lady Slipper property is located within the Moyie block in the footwall of the Moyie fault (Figure 2).

The property is located within the area included in Geological Survey of Canada open file 6304 (Brown and Macleod. 2011). However, it is located at the western edge of the map and near the northern limit of the map. Thus, Figure 2 includes portions of adjacent map areas for a more expanded view.

The map area is dominated by the north-northeast plunging Moyie anticline (Figure 2), within which some of the oldest stratigraphic layers (Mesoproterozoic Lower Aldridge Formation) are exposed (Figure 2)

Previous Exploration efforts have been focused on finding:

1) Stratabound deposits similar to the Sullivan deposit, primarily in the same stratigraphic interval (Lower-Middle Aldridge contact, or LMc; Figure 2), or in fragmental black smoker type deposits at other stratigraphic positions (e.g., Middle Aldridge), and
2) Polymetallic vein deposits associated with joints, fractures or faults, such as the St. Eugene deposit.

7.0 Work Accomplished in 2019

7.1 Soil Geochemical Data

Following acquisition of the property and some initial analyses of rock geochemistry on prospecting samples (Kennedy, 2016), it was decided to compile and analyse soil geochemical and geophysical data. The soil geochemical data for Zn and Pb (Figures 3a and 3b) were reported in Kennedy et al. (1999) and are located within the small, central claim block of the property (Figure 2). However, the results were not provided at that time in digital format, so the locations were digitized from the maps to be analysed here. In addition, the previous report (Kennedy et al. 1999) did not include grid values for Cu, which are

included here (Figure 3c).

There are two key features that are apparent on the soil maps. First, Zn exhibits a strong anomaly in the northwest corner of the map. This anomaly has previously been interpreted as associated with a gossan that has elevated metals (Kennedy et al. 1999). Second, the Pb and Cu values are less strong than the highest Zn values, but they are still anomalous (based on regional background estimates; Kennedy et al. 1999). Of particular note is that the elevated Pb and Cu values appear to be concentrated in the southern half of the map area.

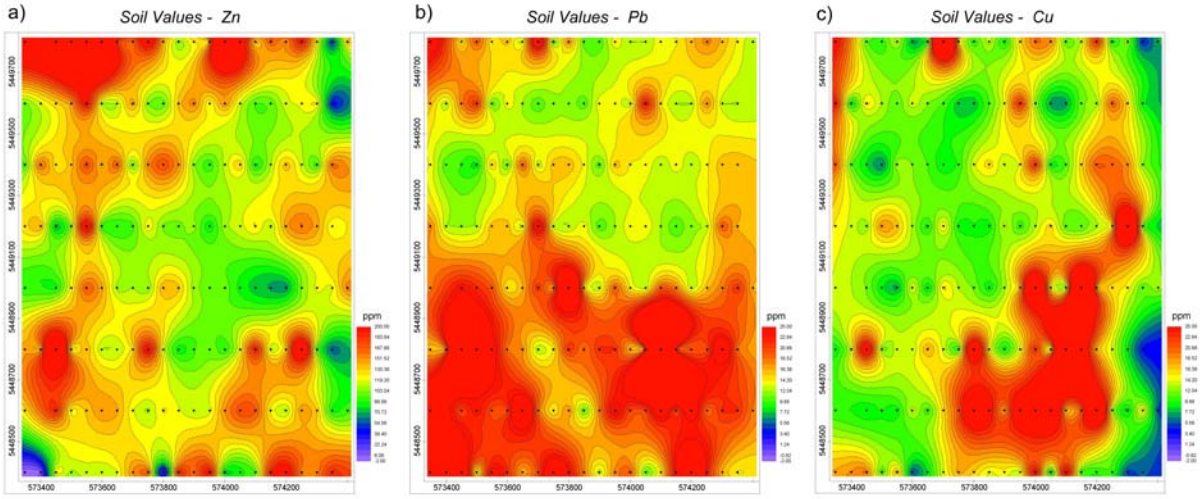


Figure 3. Plots of the soil geochemistry values for a) Zn, b) Pb and c) Cu for the central portion of the Lady Slipper property. The maps were digitized from the maps in Kennedy et al. (1999) and re-plotted here along with the values for Cu.

When these results are compared with the structure as mapped by Anderson (2008), they present a pattern that may be significant for additional exploration (Figure 4). Anderson (2008) proposed that there may be a northwest-striking structure that crosses the property as shown in Figures 2 and 4. Such structures can be significant for, a) separating different domains with different concentrations of metals, and/or, b) acting as conduits for fluid migrations and deposition of metals.

In Figure 4, it appears that Pb and Cu show a strong spatial correlation with the structure, with the elevated values of Pb and Cu being located primarily south of the NWS structure, whereas Zn appears to be more evenly distributed across the NWS structure.

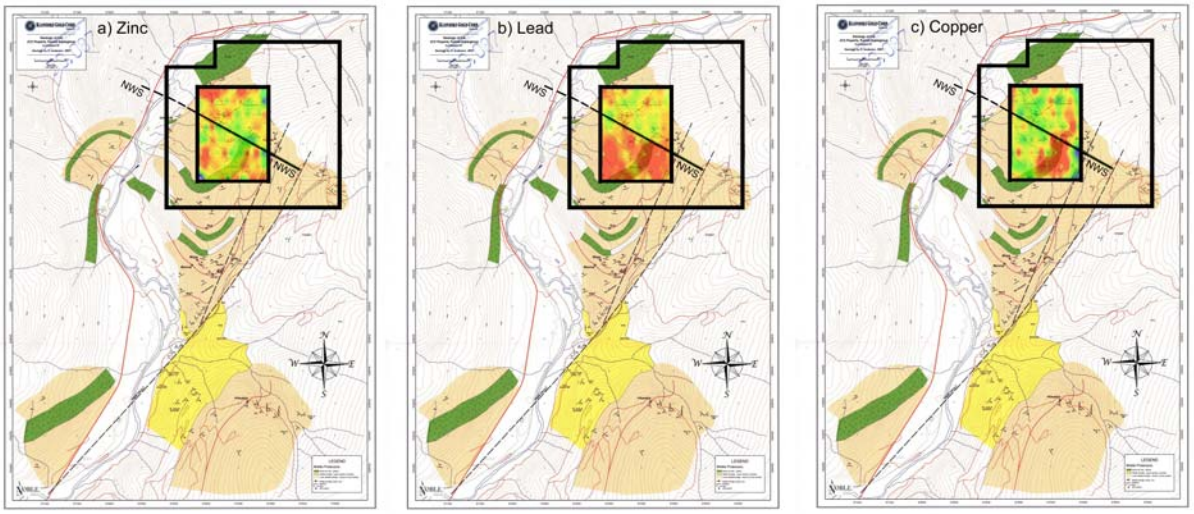


Figure 4. The results from the geochemical maps overlain on the geology interpreted by Anderson (2009). Note how the anomalous Pb (b) and Cu (c) appear to concentrate south of the NWS structure.

7.2 Geophysical Data

Two types of geophysical data are available for the property. They are the magnetic anomaly data from Natural Resources Canada (http://gdr.agg.nrcan.gc.ca/gdrdap/dap/search-eng.php) and seismic reflection data recorded during hydrocarbon exploration if the 1980s (Cook and Van der Velden, 1995; Figure 2).

7.21 Aeromagnetic Data

Aeromagnetic anomaly data were acquired from Natural Resources Canada for the area shown in Figure 2. Because the objectives here are primarily associated with delineating the structure, appropriate processing can include the tilt angle (Miller and Singh, 1994) and the General Derivative Operator (GDO; Cooper and Cowan, 2011).

The magnetic anomaly data (Figure 5 – left) clearly outline the Moyie anticline because the Creston Formation tends to have large amounts of disseminated iron oxides that appear as a series of discontinuous magnetic highs, whereas the central area of the Moyie anticline (Aldridge Formation) tends to be more subdued. After application of the tilt angle, however, the geometry of the anomalies, regardless of strength, are more apparent. Accordingly, this result implies that application of the generalized derivative operator (GDO; Cooper and Cowan, 2011) with directional component may help to view the structures in different directions.

Figure 6 shows an application of the GDO. The GDO includes both azimuth and inclination. For each of these maps, the inclination is 10^{o}, while the azimuth varies from 0^{o} – 360^{o} in steps of 45^{o}. Although there are many interesting features on these maps, the relevant ones for this analysis are those that are in the vicinity of the Lady Slipper property. As indicated in the map at 135^{o} azimuth (arrow in Figure 6), it appears that there are two

indications of a northwest structure. First, the Creston magnetic anomaly pattern appears disrupted along a northwest oriented boundary, and, second, the position of the NWS feature appears to delineate a transition from a magnetic high to the northeast to magnetic low to the southwest. Thus, although it may be diffuse, there appears to be evidence in the magnetic anomalies for a transition that coincides with the NWS structure.

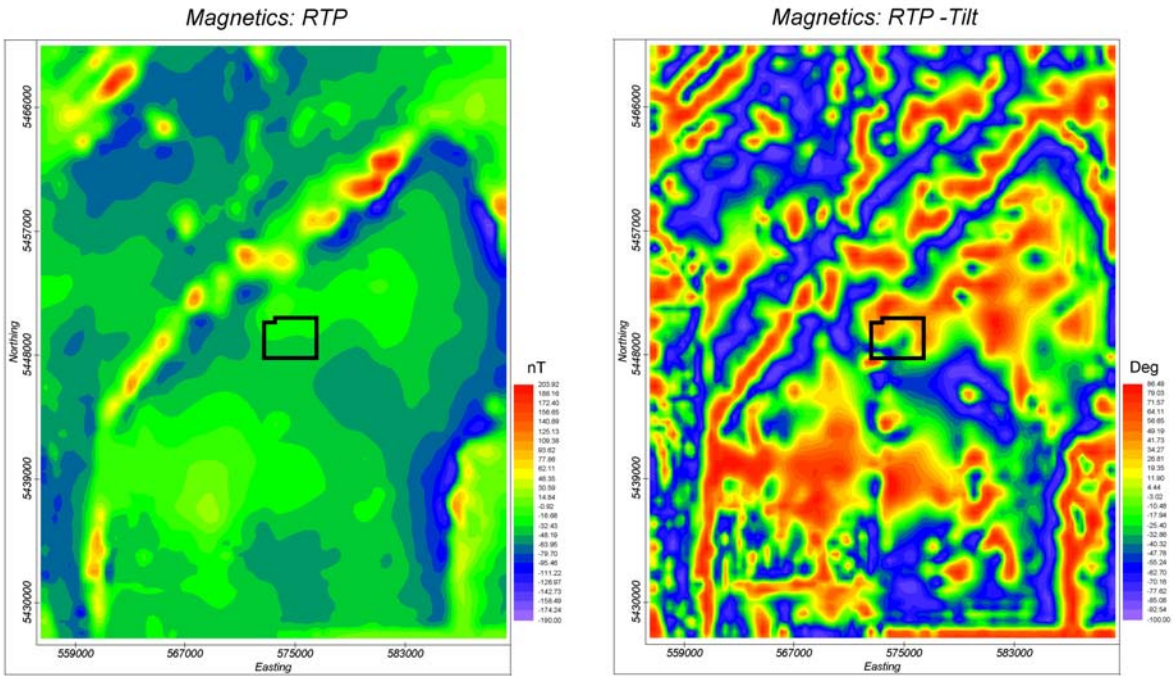


Figure 5. (left) Magnetic anomaly data for the region in Figure 2. Data were acquired from Natural Resources Canada and have a grid spacing of about 250m and have been reduced to the North Pole. (right) The same data after application of the tilt angle show considerably more geometric information. In the vicinity of the Lady Slipper property there does appear to be a northwest oriented transition from high to low values where the NWS structure appears to be located.

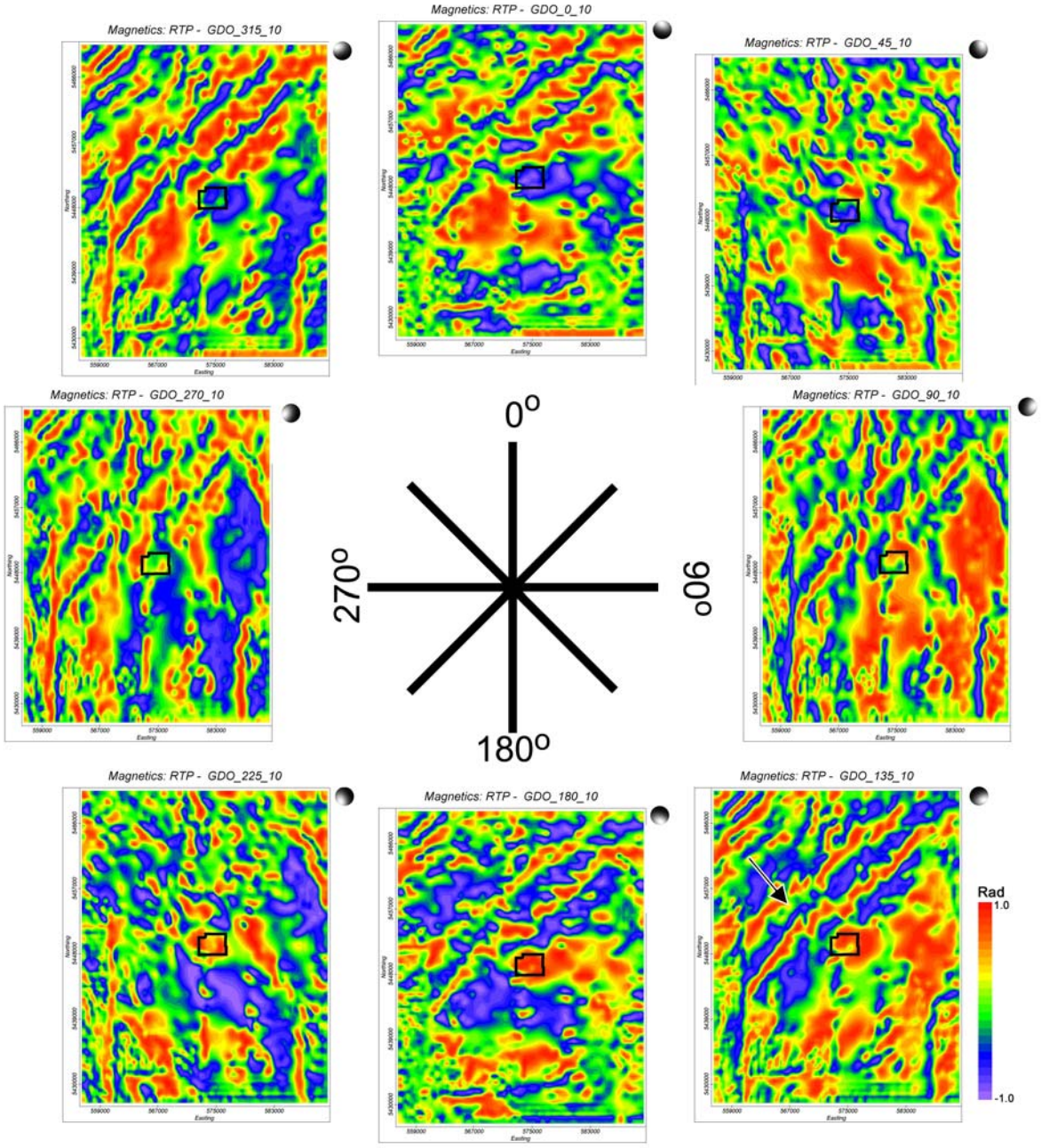


Figure 6. Application of the Generalized Derivative Operator (GDO) in eight different azimuthal directions. For each of these, the display includes the azimuth (first number) and illumination inclination (second number). The location of the Lady Slipper property is indicated by the black rectangle.

7.22 Seismic Reflection Data

More than 1000 km of seismic reflection data were recorded in the Purcell anticlinorium in Canada in the early and middle 1980's by Duncan Energy Corporation during exploration activities for hydrocarbons. Recording was accomplished with typical industry-standard parameters for that time period (early 1980's) and are listed in Cook and van der Velden (1995). The data have been processed and interpreted for regional studies (e. g., Cook and Van der Velden, 1995; Van der Velden and Cook, 1996); here we focus on two of the lines that traverse part of the area of Figure 2, and that provide important subsurface information for the Lady Slipper property.

Locations for two lines used in this report are shown in Figure 2. Line 4 is a long regional line that extends from near the Rocky mountain trench on the east to the west side of the Moyie anticline on the west. Because the line curves from dominantly east-west to south-westerly in the vicinity of the Lady Slipper property, it crosses the northwest corner of the property where the NWS structure has been interpreted. Thus, it is nearly perpendicular to the NWS structure and therefore provides an important cross section of the area near the NWS structure.

In addition to line 4, however, a second, much shorter line (line 16.1) is located north if highway 3 approximately 3 km east of the property. However, line 16.1 is located in a position that crosses, from north to south, from within the Creston Formation, across the Upper Aldridge and into the Middle Aldridge Formation rocks. At the south end of the line is nearly crosses exposures of the Sundown sill, which is a prominent, regional seismic marker (Cook and van der Velden, 1995).

7.23 Data Processing

No additional processing beyond what was accomplished in 1995 (Cook and van der Velden, 1995) was undertaken here. The data are sufficiently high quality to map key horizons that delineate the structure.

7.24 Interpretation

Although there are a number of interesting features on the seismic section, two are important for the Lady Slipper property. They are:

1. The line crosses the position of the interpreted NWS structure at high angle. The NWS structure appears to intersect the seismic line at approximately common depth point (CDP) 1624, and,
2. The thickness of the stratigraphic interval between the Sundown sill (Middle Aldridge) and the top of the LAS (Lower Aldridge sill) layers appears to increase southwestwards.

For the first of these features, the approximate location of the NWS structure where it intersects the position of the seismic line is determined by determining the UTM coordinates of the intersection point and, because CDP locations are approximately 16.7m apart (Cook and van der Velden, 1995), the intersection point (CDP 1624) can be determined with high precision.

The seismic geometry in the vicinity of CDP 1624 (enlarged in Figure 8) is of an approximately 6-8 km wide syncline. No clear fault structures are visible that may be attributed to the NWS structure. It is possible that NWS represents one of the following: 1) a relatively narrow, high-angle deformation zone, or, 2) a vertical structure with movement perpendicular to the line of section (i.e., perpendicular to the seismic profile) such that little or no offset appears in the seismic layering, or, 3) the NWS fault (if it exists) may be confined to the part of the section above ~2.5 km at this location.

Southwest of the syncline, the layering appears to diverge (thicken) southward (Figure 7, red lines) and some characteristics of this thickening can be seen in the detail shown in Figure 8. Significantly, Cook and van der Velden (1995), Ainsworth (2009) and Cook (2018) have illustrated the consistent seismic stratigraphic characteristics that allow the Middle Aldridge Sundown sill (green line in Figure 7) to Lower Aldridge sills (LAS; blue line in Figure 7) interval to be mapped throughout the region. As this interval includes the transition from Middle Aldridge to Lower Aldridge, it also includes the 'Sullivan horizon', or the stratigraphic position of the Sullivan mine.

At this location (southwest of the NWS structure), the Sundown to LAS interval appears to double (or more) in thickness in the vicinity of Charlie Creek (Figure 7) and then may taper (thin) southwestward near Yahk (Figure 7). Accordingly, the geometry is that of an inverted basin.

Although we only have this single seismic cross section, the interpretation of thickening southwest of the NWS suggests there may be a small, high-order basin within the Sundown to Lower Aldridge interval. In some interpretations, these rocks are interpreted to be the 'Ramparts Facies', thus raising the possibility that the Ramparts facies elsewhere may be associated with previously undetected high-order basins.

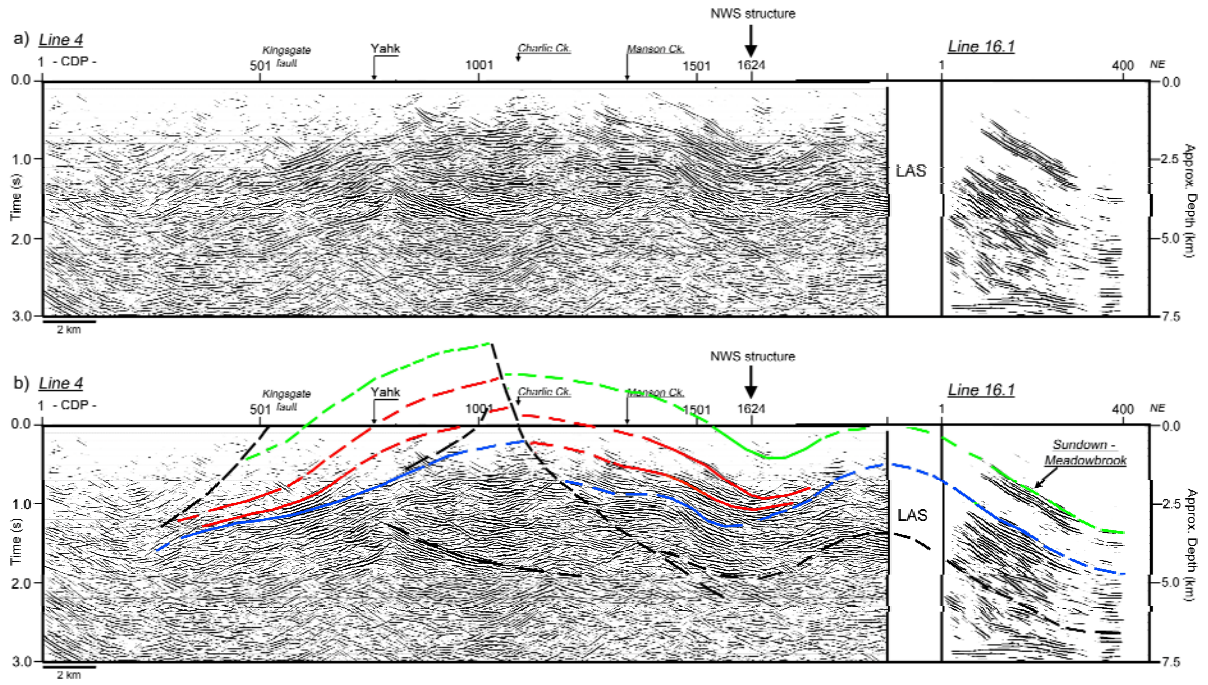


Figure 7. Processed seismic lines 4 and 16.1 with interpreted horizons indicated in colour. Here, the green line represents the Sundown sill, the blue line represents the top of a package of layered seismic reflections called the Lower Aldridge Sills (LAS) by Cook and van der Velden (1995) and may represent the Bootleg sill (or equivalent) that is present near the Sullivan deposit. The red lines outline apparent thickening southwest of the NWS structure.

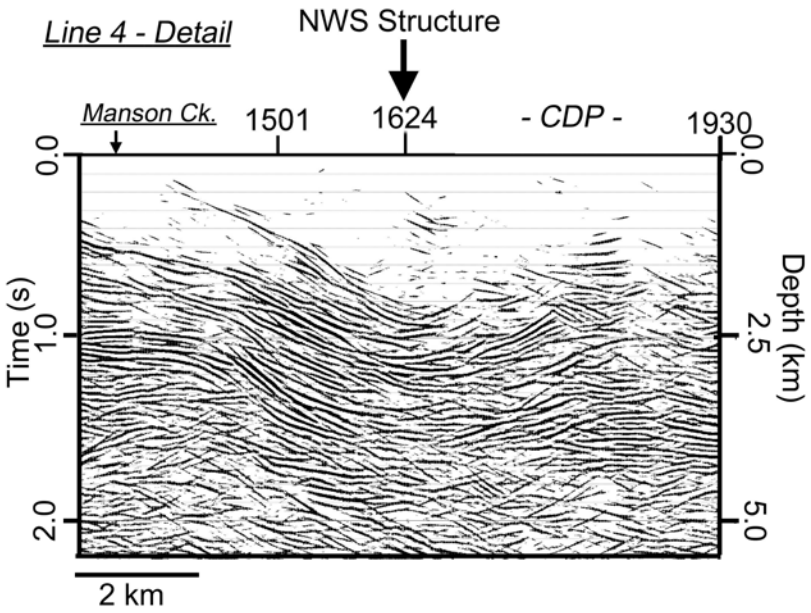


Figure 8. Enlargement of the seismic line across the northwest corner of the Lady Slipper property. The location where the NWS structure intersects the seismic profile is approximately CDP 1624. Note that this location is situated at or above a prominent syncline. There are no clear faults that can be correlated with the NWS.

8.0 Summary and Conclusions

Integration of geophysical (seismic reflection and magnetic data) with geological data (mapping, rock samples, and soil anomalies) in the area of the Lady Slipper property southwest of Moyie has led to a number of findings that are relevant to the potential for the area. They are:

1. Digitization and plotting of the soil anomalies for Zn, Pb and Cu indicate that an interpreted northwest-oriented structure (NWS) separates an area to the north with low values (particularly of Pb and Cu) from the area south of NWS where Pb and Cu are elevated;
2. Projection of the NWS structure to the seismic cross section allows the seismic geometry to constrain the subsurface geometry in the vicinity of NWS. At the present state of processing, there does not appear to be any significant vertical offset that could be visible on the seismic profile. This means that either the NWS structure is not present very deep in the subsurface, or that NWS may offset along NW or SE at high angle to the seismic section such that there is no apparent offset of the layering, and,
3. The seismic layering between the Sundown sill and the Lower Aldridge sills appears to thicken southwest of NWS and is arched such that the thickened layers have the appearance, and may therefore be imaging, an inverted higher order basin.

9.0 References

Ainsworth, H. L. 2009, Structure of the Moyie anticline delineated on a grid of seismic reflections profiles in southeastern British Columbia, MSc thesis, University of Calgary, 71pp.

Anderson, D. 2008. Geological report on the JCD property, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 30087, 10pp.

Baxter, P. 1990. Diamond Drilling Report: Stoney Creek Property, Fort Steele Mining Division, British Columbia, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 19957, 48pp

Brown, D. A., and MacLeod, R. F. (compilers) 2011. Geology, Yahk River, British Columbia, Geological Survey of Canada Open File 6304, scale 1:50000.

Cook, F. 2018. Merging geological, seismic reflection and magnetotelluric data in the Purcell anticlinorium, southeastern British Columbia, GeoscienceBC Report 2018-09, 52pp.

Cook, F., and Van der Velden, A. 1995, Three-dimensional crustal structure of the Purcell anticlinorium in the Cordillera of southwestern Canada, Geological Society of America Bulletin, v. 107, 642-644.

Hoy, T. 2008. Diamond drill report, Cruz property, southeastern British Columbia, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 30232, 20pp.

Kennedy, C. 2016. Rock Geochemistry, Lady Slipper property, Fort Steele Mining Division, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 36269, 18pp.

Kennedy, C., Klewchuk, P., and Anderson, D. 1999. Assessment report for the Cruz property: Part A, Prospecting Report; Part B, Geological Report on the Cruz claims; Part C, Geochemical Report on the Cruz claims, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 26065, 25pp.

Pighin, D. 2000. Diamond drilling report, Gas 9 & 10 claims, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 26318, 49pp.

Pirie, I. D. 1988a. Stoney Creek property, Fort Steele Mining Division, British Columbia: Report on the 1987 Geological, Geochemical and Geophysical Exploration Program, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 17633, 69pp.

Pirie, I. D. 1988b. Stoney Creek property, Fort Steele Mining Division, British Columbia: Report on the 1988 Exploration Program, BC Ministry of Energy, Mines and Petroleum Resources, Assessment Report 18152, 25pp.

Van der Velden, A. and Cook, F. 1996, Structure and tectonic development of the southern Rocky Mountain trench, Tectonics, v. 15, 517-544.

10.0 Statement of Costs

Property:	Lady Slipper	
Event #	5734113	
Start - End Date:	March 8, 2019 – March 13, 2019	
Tenure work done on:	1037318,1066459	
Type of work done:	Geophysical – Seismic, magnetics; Geochemical	
Fred Cook -	Digitize and map Geochemical data: 1.0 day Download and analyse magnetic data: 2.0 day Plot and interpret seismic data: 0.5 day Graphics: 0.5 day	
	4 Man days @ 800/day	3,200.00
	Report & Maps	3,000.00
Total		**$ 6,200.00**

Note: The property is partially located on the seismic line and on the magnetic data area. As noted in the text, there was no additional work other than scaling and interpretation applied to the seismic data, and the analysis of the magnetic data required analysing a large area to see trends.

The geochemical data are located entirely within the property boundaries.

11.0 Statement of Qualifications

I, **Frederick A. Cook** do hereby certify that:

I attained the degree of Doctor of Philosophy (Ph.D.) in geophysics from Cornell University in Ithaca, New York in 1981.
I have a B.Sc. in geology (1973) and an MSc. in Geophysics (1975) from the University of Wyoming in Laramie, Wyoming.
I am a registered member of the Association of Professional Engineers and Geoscientists of British Columbia (P. Geo. 2009). Previously, from 1984-2009, I was registered with the Association of Professional Engineers, Geologists and Geophysicists of Alberta as both a P. Geol. and a P. Goph.
I am a member of the American Geophysical Union and the Geological Society of America.
I have worked as a geophysicist/geologist for a total of 40 years since my graduation from university. I have worked for the Continental Oil Company (1975-1977) and the University of Calgary (1982-2010).
I was the Director of the Lithoprobe Seismic Processing Facility at the University of Calgary from 1987-2003.
In 2011 I was appointed an International Consultant for the Chinese SinoProbe project.
I have a thorough knowledge of the geology and geophysics of southern British Columbia based on extensive geological and geophysical fieldwork.
I have authored more than 125 scholarly publications in peer-reviewed journals and books.
I am the author of this report.
I am not aware of any material fact or material change with respect to the subject matter of this report, which is not reflected in this report.

"signed and sealed" at Salt Spring Island, B.C.

Frederick A. Cook, P. Geo.
Salt Spring Imaging, Ltd
128 Trincomali Heights
Salt Spring Island, B.C. V8K1M8
Dated at Salt Spring Island, B.C. this 31st day of May, 2019

Registration License No. 34585
Association of Professional Engineers and Geoscientists of British Columbia

Appendix 1. Digitized Soil Results

Soil Geochemistry Values

"note: UTM coordinates were digitized from maps in Kennedy et al., 1999"

"note2: Assay values in ppm from Kennedy et al, 1999"

UTMe	UTMn	Zn	Pb	Cu
573350	5449800	254	28	26
573400	5449800	276	14	11
573450	5449800	266	20	10
573500	5449800	510	14	14
573550	5449800	368	16	7
573600	5449800	180	12	9
573650	5449800	160	30	53
573700	5449800	224	10	15
573750	5449800	142	18	10
573800	5449800	104	10	14
573850	5449800	128	10	9
573900	5449800	128	14	16
573950	5449800	460	12	20
574000	5449800	230	12	19
574050	5449800	128	14	11
574100	5449800	170	14	13
574150	5449800	148	16	24
574200	5449800	202	18	9
574250	5449800	126	16	13
574300	5449800	42	14	4
574350	5449800	138	12	8
573350	5449600	100	16	25
573400	5449600	118	12	8
573450	5449600	132	18	16
573500	5449600	144	22	13
573550	5449600	208	10	11
573600	5449600	108	14	14
573650	5449600	110	12	12
573700	5449600	152	10	11
573750	5449600	102	12	8
573800	5449600	96	12	8
573850	5449600	140	10	11
573900	5449600	158	14	14
573950	5449600	116	14	24
574000	5449600	154	12	12
574050	5449600	114	24	7
574100	5449600	94	14	7
574150	5449600	96	12	12
574200	5449600	118	12	12
574250	5449600	120	18	21
574300	5449600	132	12	16
574350	5449600	38	12	9
573350	5449400	92	14	21
573400	5449400	166	10	11

573450	5449400	128	10	9
573500	5449400	138	8	6
573550	5449400	176	16	13
573600	5449400	138	10	12
573650	5449400	172	20	11
573700	5449400	94	12	9
573750	5449400	156	16	10
573800	5449400	178	16	14
573850	5449400	152	14	16
573900	5449400	104	10	13
573950	5449400	88	16	14
574000	5449400	114	14	24
574050	5449400	138	14	9
574100	5449400	80	12	11
574150	5449400	112	14	16
574200	5449400	142	12	21
574250	5449400			
574300	5449400	88	16	19
574350	5449400	166	16	12
573350	5449200	132	18	15
573400	5449200	148	12	14
573450	5449200	68	12	12
573500	5449200	100	12	19
573550	5449200	232	16	17
573600	5449200	84	16	13
573650	5449200	90	12	9
573700	5449200	90	28	16
573750	5449200	128	12	9
573800	5449200	100	12	10
573850	5449200	100	14	9
573900	5449200	108	10	14
573950	5449200	78	12	10
574000	5449200	110	14	13
574050	5449200	116	14	16
574100	5449200	130	12	11
574150	5449200	108	10	11
574200	5449200	150	12	13
574250	5449200	162	12	14
574300	5449200	148	20	48
574350	5449200	118	16	10
573350	5449000	88	18	14
573400	5449000	82	24	12
573450	5449000	122	22	9
573500	5449000	172	20	7
573550	5449000	146	14	15
573600	5449000	106	16	8
573650	5449000	112	22	16
573700	5449000	102	16	13
573750	5449000	146	46	12
573800	5449000	138	14	9
573850	5449000	106	12	13
573900	5449000	98	20	16
573950	5449000	100	14	42
574000	5449000	84	12	14
574050	5449000	74	20	11

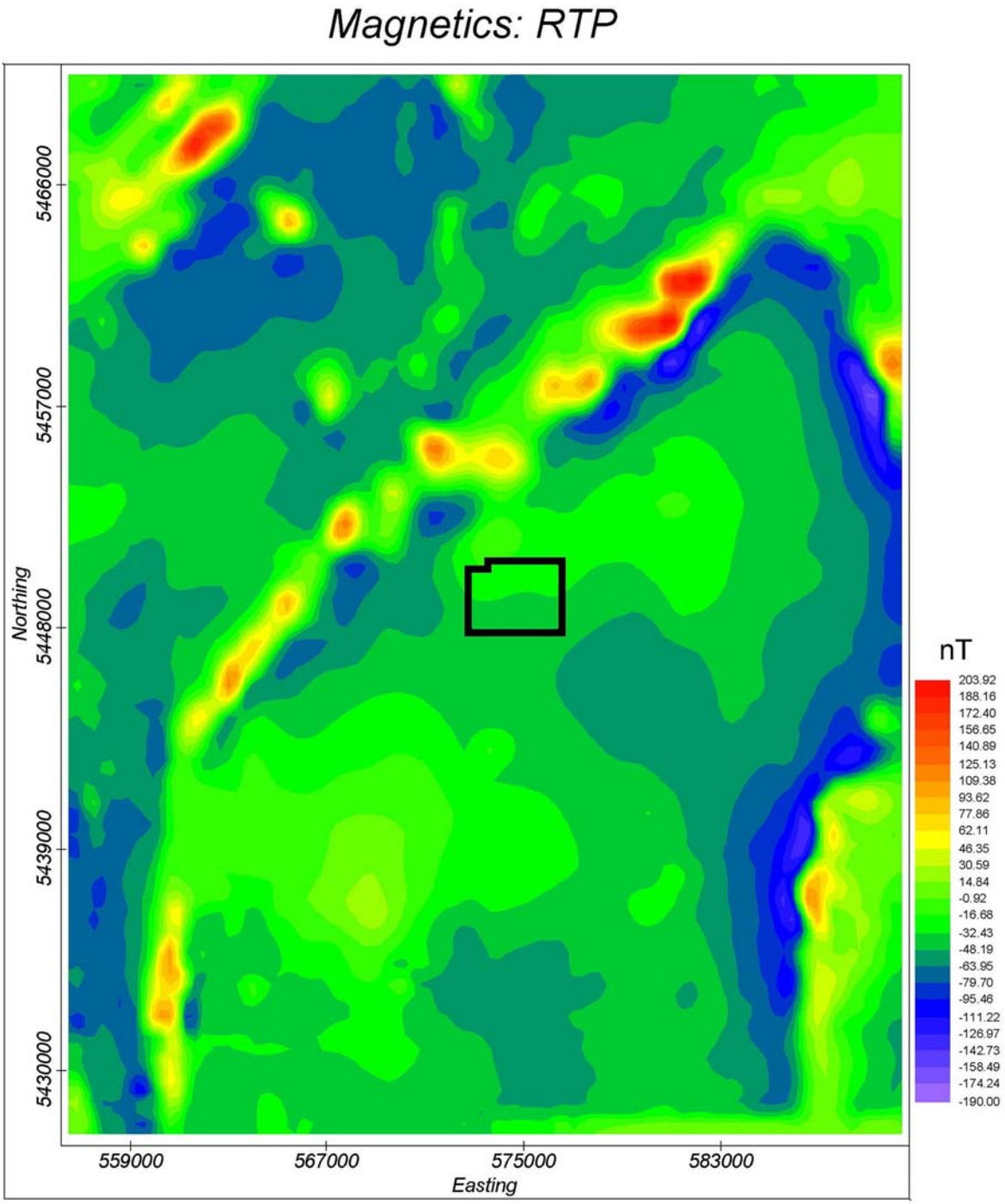
574100	5449000	69	18	54
574150	5449000	64	12	17
574200	5449000	104	16	16
574250	5449000	122	18	15
574300	5449000	116	22	11
574350	5449000	158	16	13
573350	5448800	152	16	9
573400	5448800	138	16	13
573450	5448800	342	62	30
573500	5448800	118	26	11
573550	5448800	144	26	14
573600	5448800	110	18	13
573650	5448800	112	18	18
573700	5448800	128	12	14
573750	5448800	216	14	9
573800	5448800	114	22	35
573850	5448800	80	18	14
573900	5448800	94	22	9
573950	5448800	104	22	14
574000	5448800	86	16	24
574050	5448800	118	16	12
574100	5448800	202	134	59
574150	5448800	108	18	29
574200	5448800	132	20	17
574250	5448800	274	20	14
574300	5448800	92	30	9
574350	5448800	56	18	4
573350	5448600	130	30	10
573400	5448600	196	20	9
573450	5448600	120	24	10
573500	5448600	138	20	9
573550	5448600	152	20	14
573600	5448600	146	34	10
573650	5448600	120	18	16
573700	5448600	108	14	21
573750	5448600	130	18	33
573800	5448600	120	10	26
573850	5448600	114	18	17
573900	5448600	114	26	32
573950	5448600	152	20	23
574000	5448600	174	20	37
574050	5448600	172	28	16
574100	5448600	122	20	20
574150	5448600	108	28	42
574200	5448600	152	18	12
574250	5448600	138	22	8
574300	5448600	82	22	16
574350	5448600	92	18	5
573350	5448400			
573400	5448400			
573450	5448400	128	34	20
573500	5448400	108	12	10
573550	5448400	116	26	18

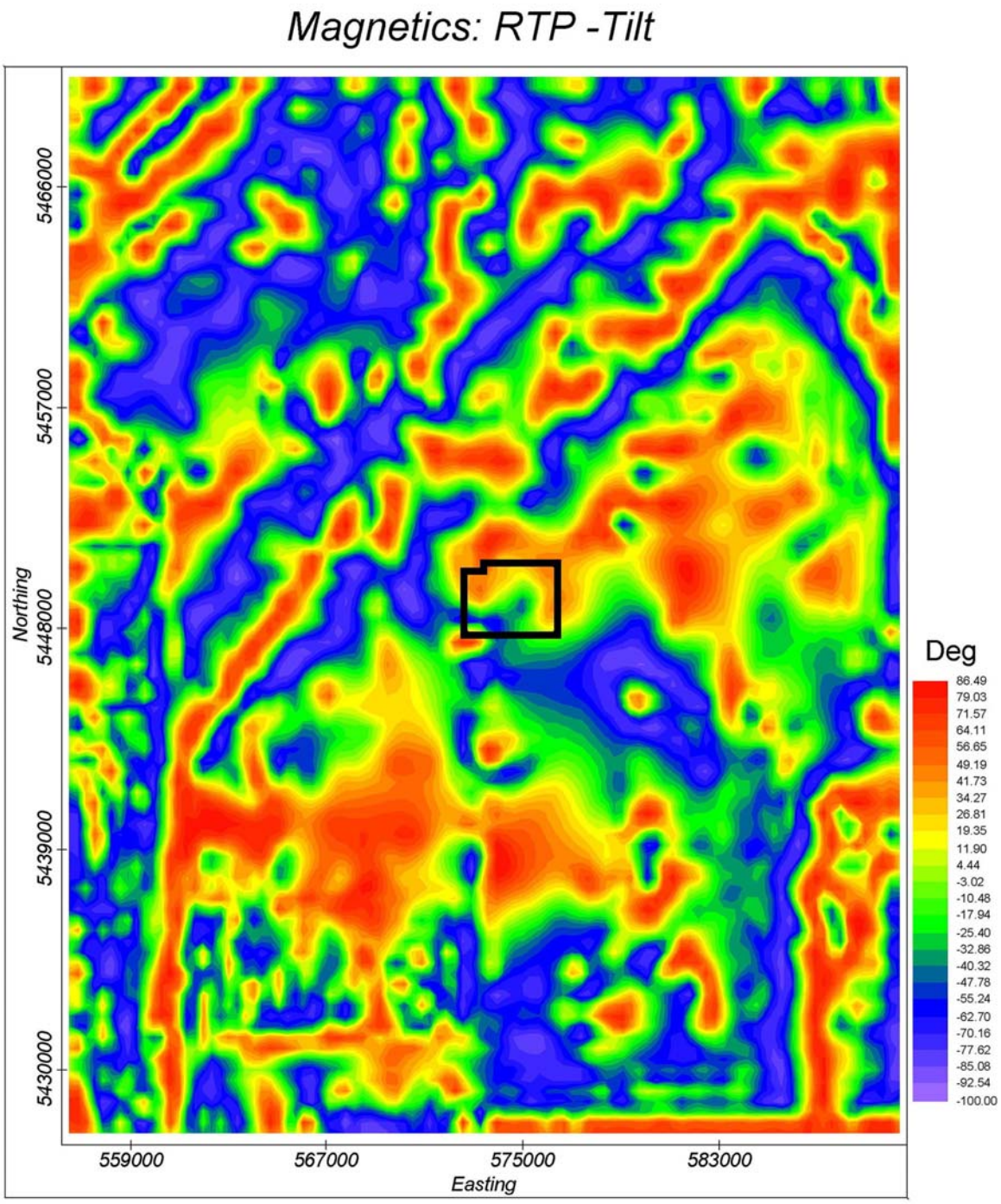
573600	5448400	112	22	5
573650	5448400	118	16	9
573700	5448400	152	20	14
573750	5448400	170	30	18
573800	5448400			
573850	5448400	196	18	14
573900	5448400	156	12	15
573950	5448400	210	18	13
574000	5448400	72	20	27
574050	5448400	84	10	7
574100	5448400	92	14	28
574150	5448400	192	24	10
574200	5448400	216	40	10
574250	5448400	154	22	11
574300	5448400	154	16	5
574350	5448400	190	14	6

Appendix 2. Magnetic Anomaly Maps

Scale 1:100000

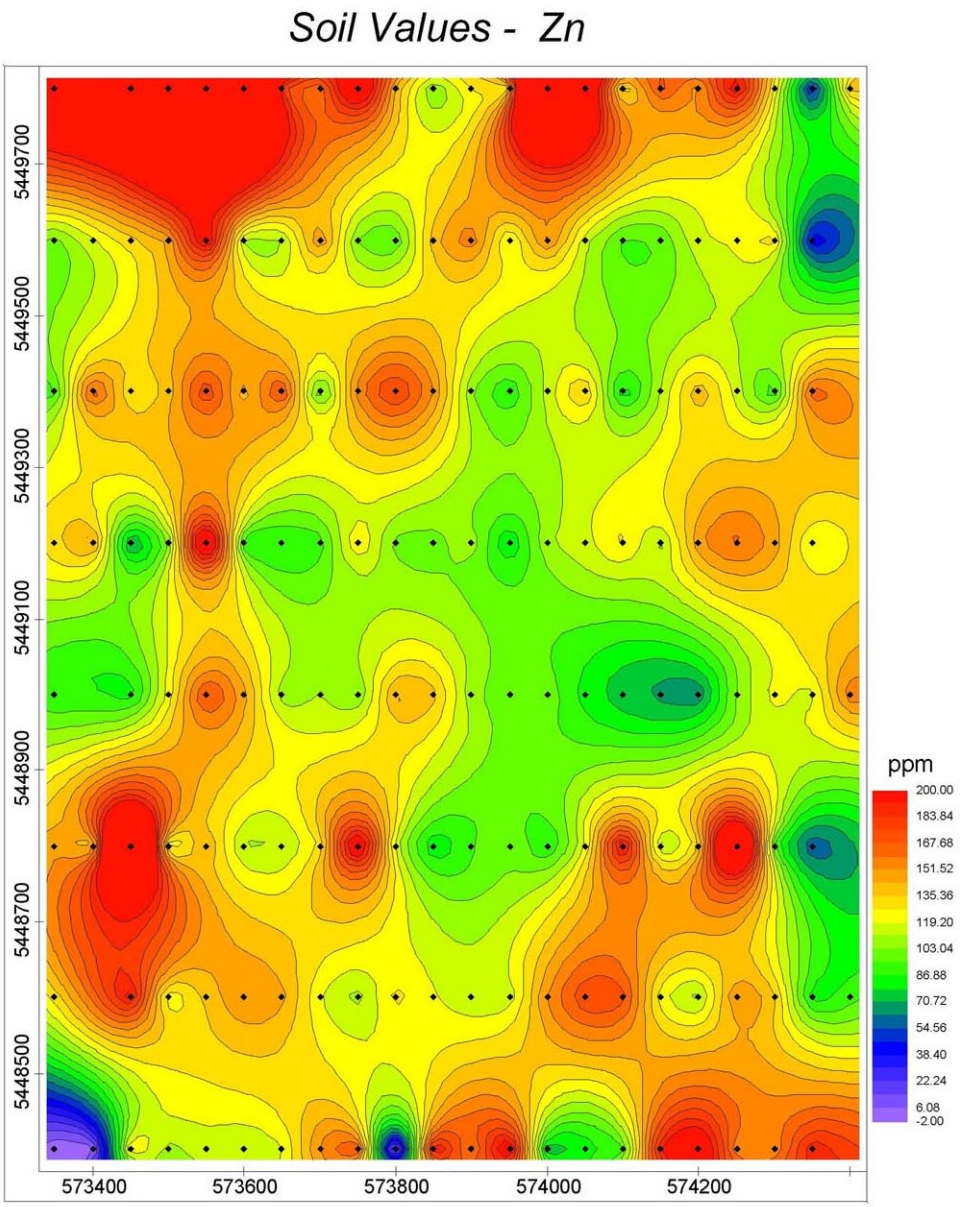
Note: Digital magnetic anomaly data were obtained from
http://gdr.agg.nrcan.gc.ca/gdrdap/dap/search-eng.php

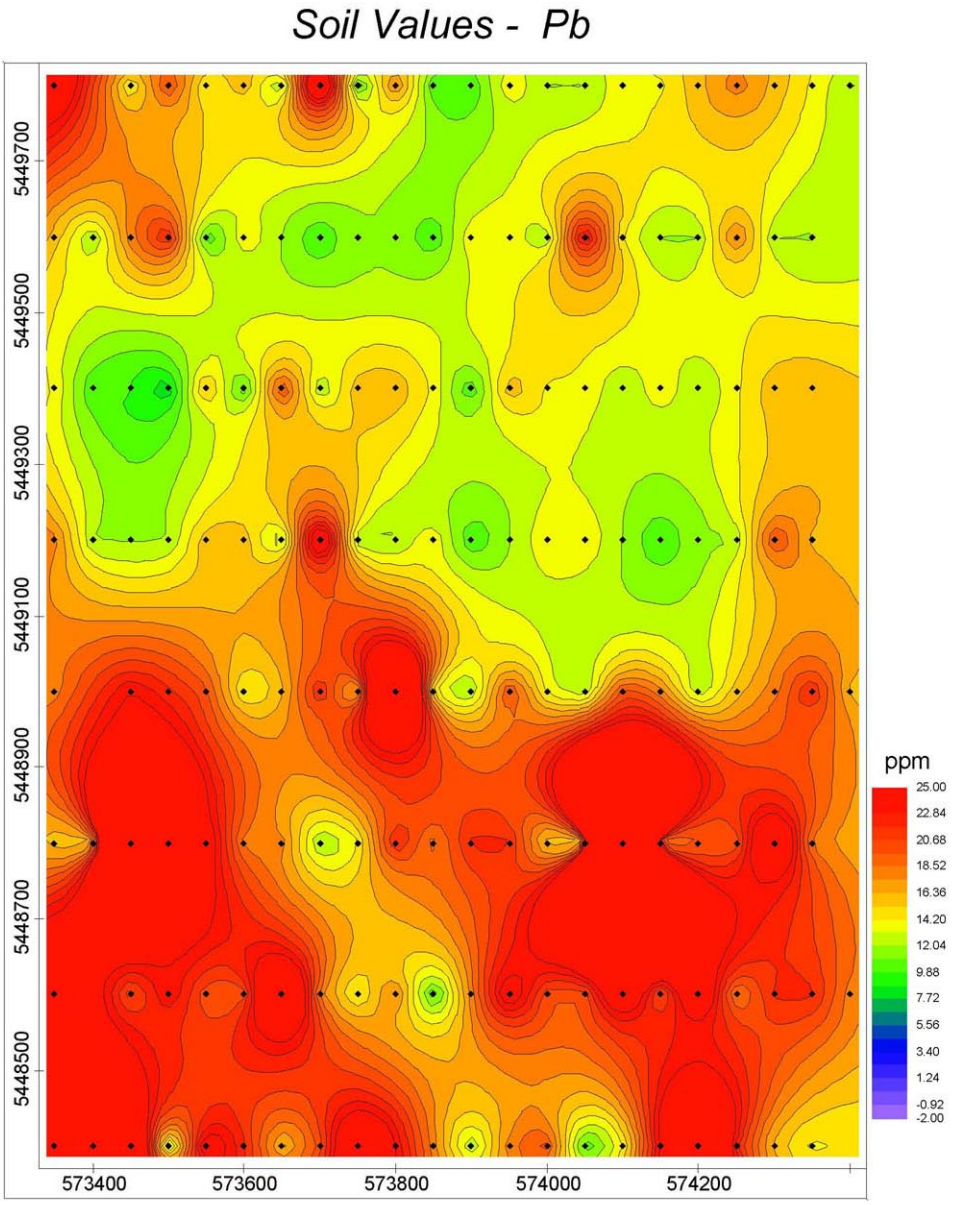

Magnetics: RTP
Northing
5466000
5457000
5448000
5439000
5430000
559000
567000
575000
583000
Easting
nT
203.92
188.16
172.40
156.65
140.89
125.13
109.38
93.62
77.86
62.11
46.35
30.59
14.84
-0.92
-16.68
-32.43
-48.19
-63.95
-79.70
-95.46
-111.22
-126.97
-142.73
-158.49
-174.24
-190.00

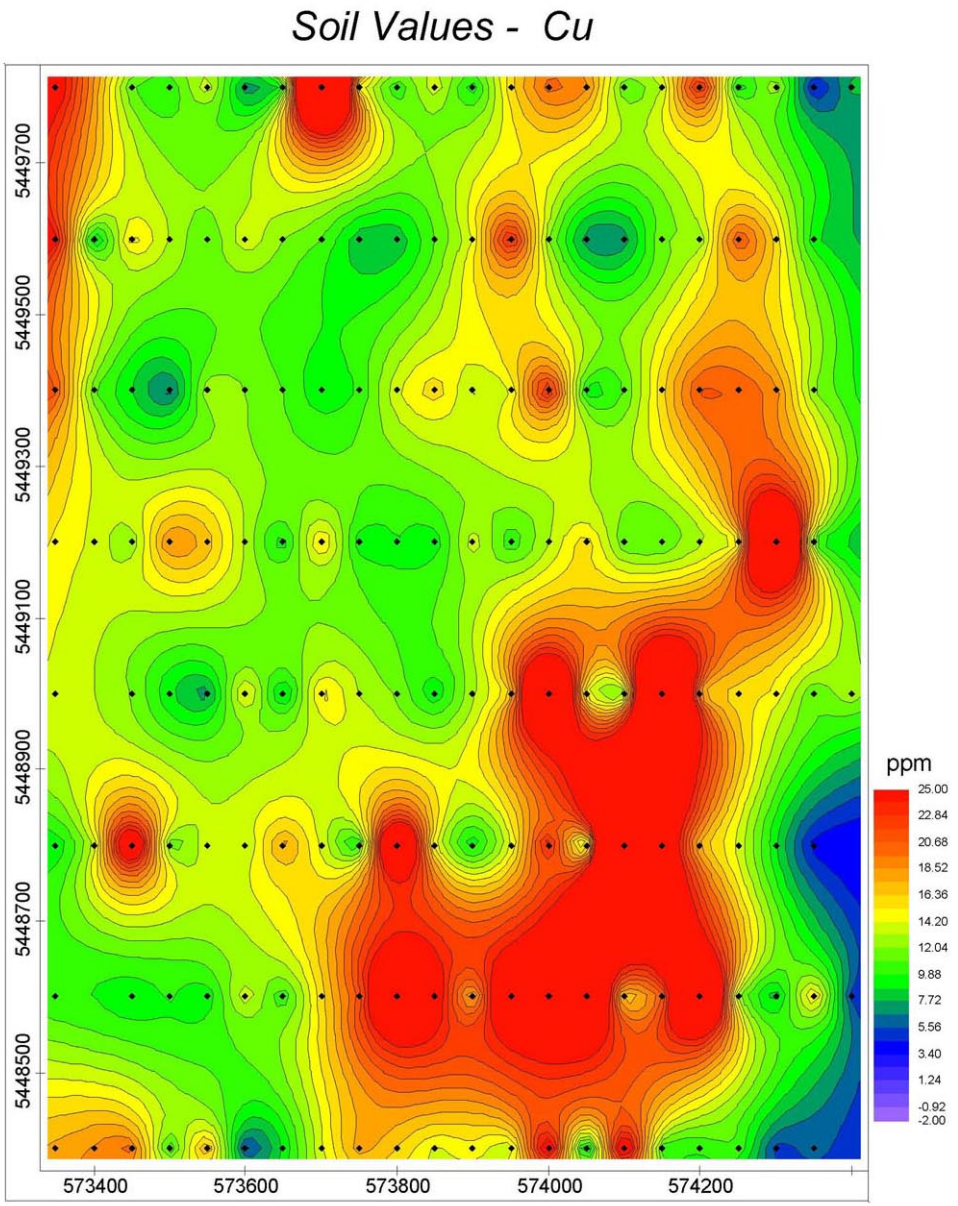

Magnetics: RTP -Tilt
Northing
5466000
5457000
5448000
5439000
5430000
559000
567000
575000
583000
Easting
Deg
86.49
79.03
71.57
64.11
56.65
49.19
41.73
34.27
26.81
19.35
11.90
4.44
-3.02
-10.48
-17.94
-25.40
-32.86
-40.32
-47.78
-55.24
-62.70
-70.16
-77.62
-85.08
-92.54
-100.00

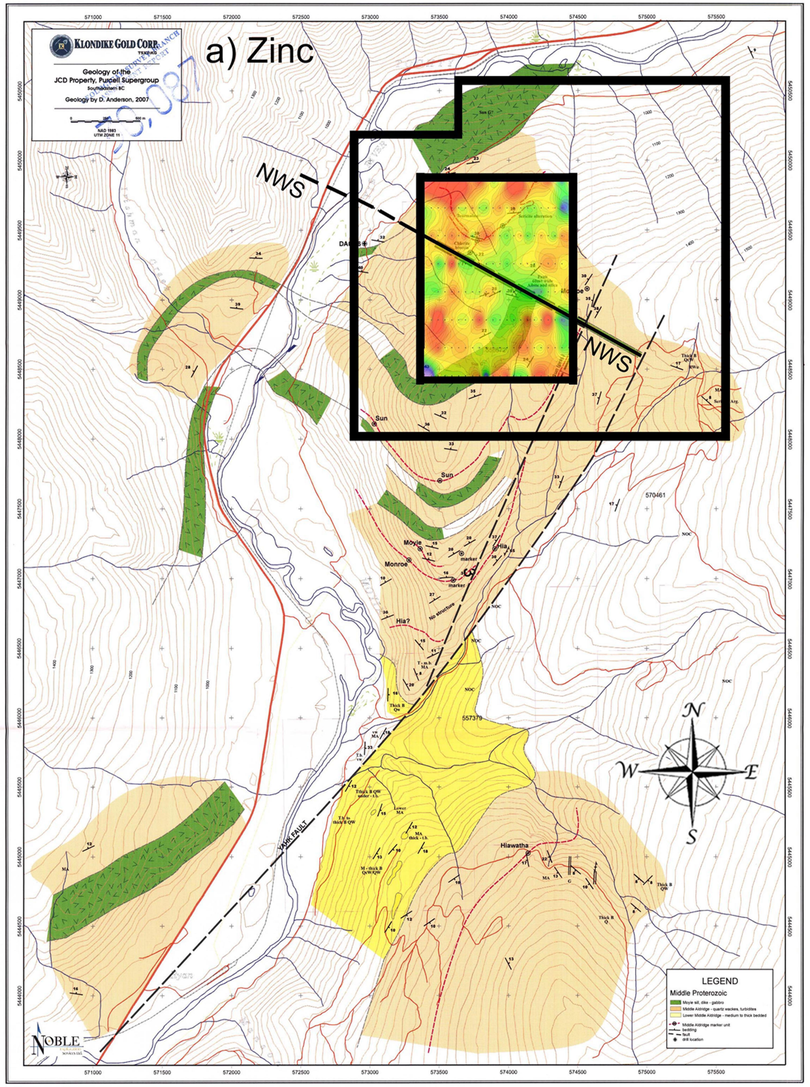
Appendix 3. Soil Geochemistry Maps

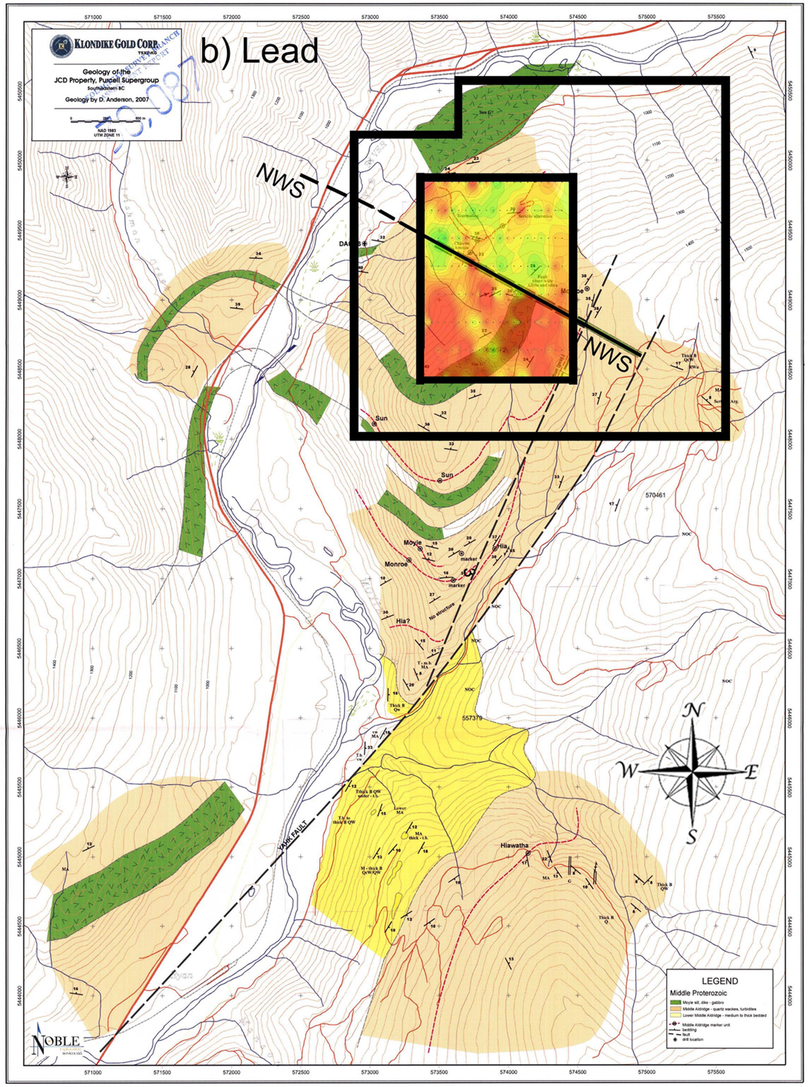
Scale 1:10000

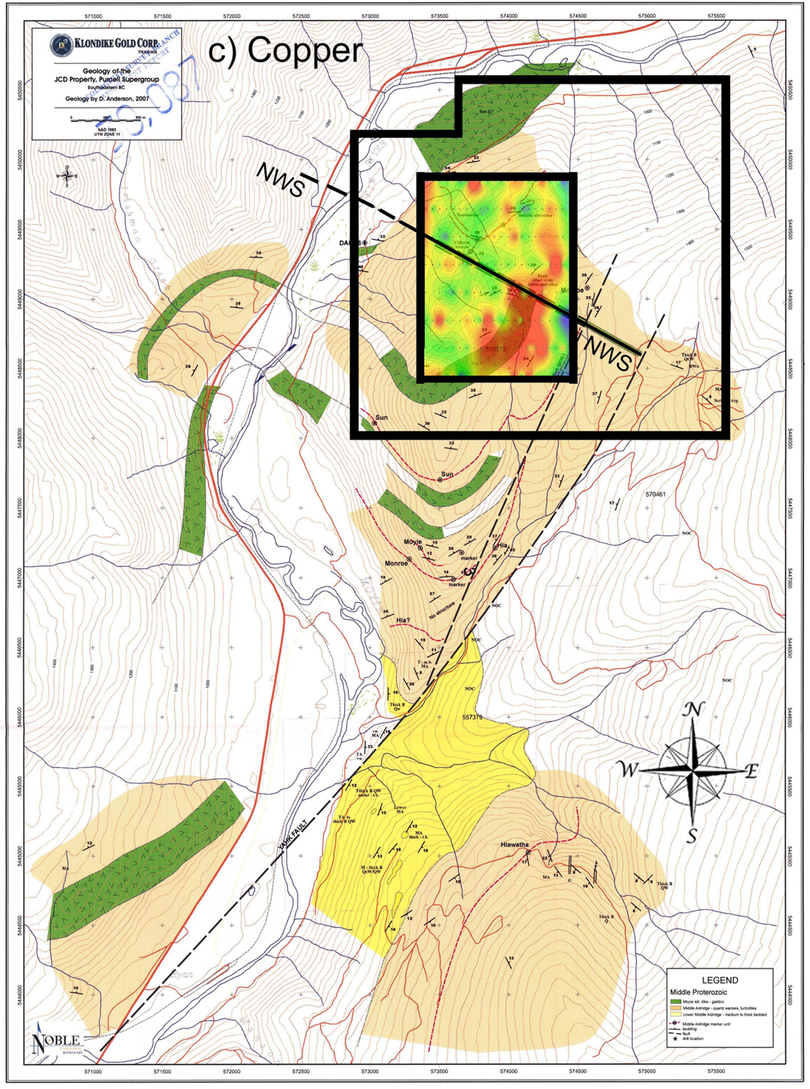

Soil Values - Zn
5449700
5449500
5449300
5449100
5448900
5448700
5448500
573400
573600
573800
574000
574200
ppm
200.00
183.84
167.68
151.52
135.36
119.20
103.04
86.88
70.72
54.56
38.40
22.24
6.08
-2.00


Soil Values - Pb
5449700
5449500
5449300
5449100
5448900
5448700
5448500
573400
573600
573800
574000
574200
ppm
25.00
22.84
20.68
18.52
16.36
14.20
12.04
9.88
7.72
5.56
3.40
1.24
-0.92
-2.00


Soil Values - Cu
5449700
5449500
5449300
5449100
5448900
5448700
5448500
573400
573600
573800
574000
574200
ppm
25.00
22.84
20.68
18.52
16.36
14.20
12.04
9.88
7.72
5.56
3.40
1.24
-0.92
-2.00

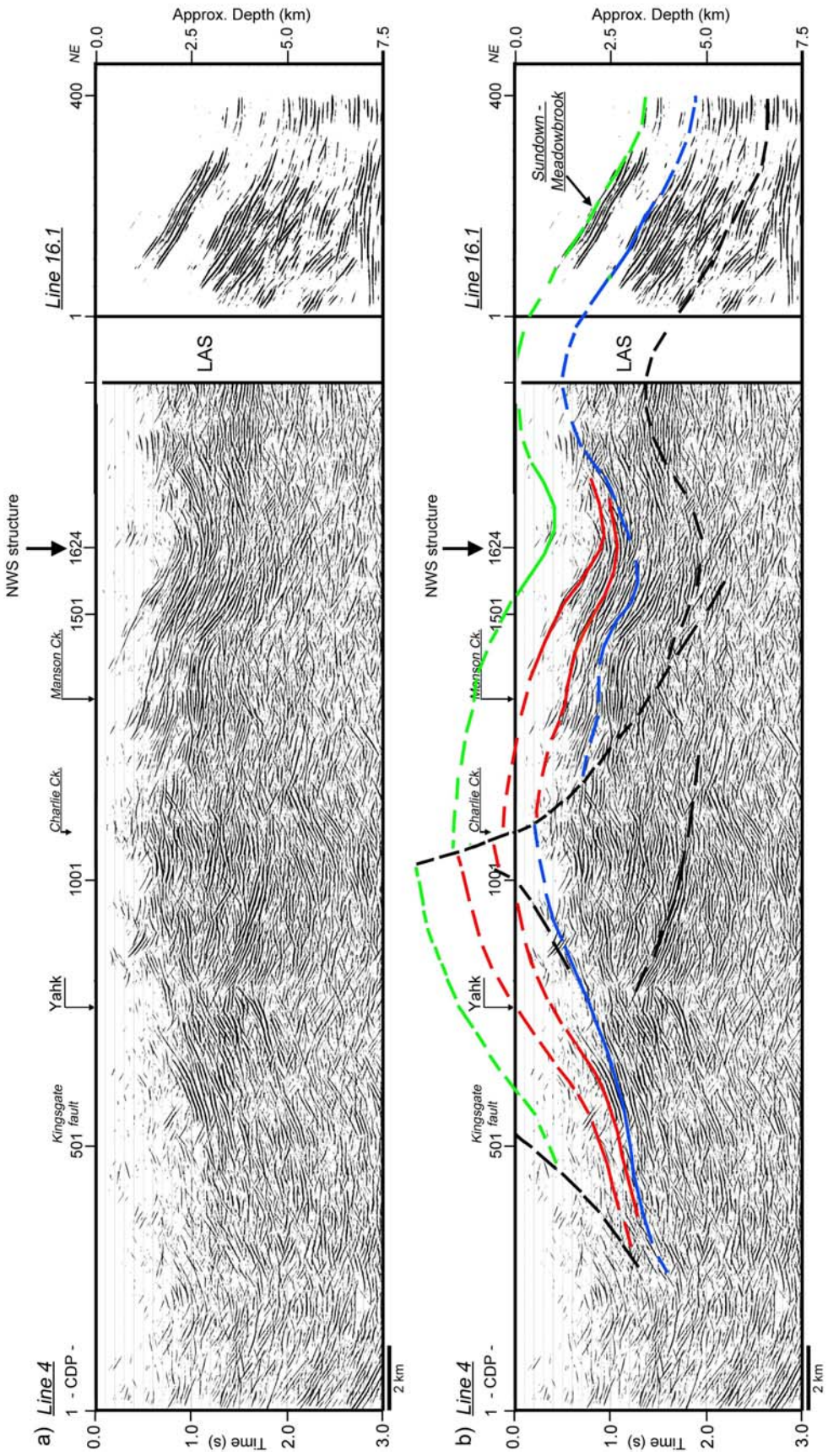

a) Zinc
KLONDIKE GOLD CORP.
TSX:NKG
Geology of the
JCD Property, Purcell Supergroup
Southeastern BC
Geology by D. Anderson, 2007
NAD 1983
UTM ZONE 11
NWS
NWS
DAM
Sun
Moyie
Monroe
Hia?
No Member
Hiawatha
557379
570461
YAHK FAULT
N
S
E
W
LEGEND
Middle Proterozoic
Moyie sill, dike - gabbro
Middle Aldridge - quartz wackes, turbidites
Lower Middle Aldridge - medium to thick bedded
Middle Aldridge marker unit
bedding
fault
drill location
NOBLE
MINERALS


b) Lead
KLONDIKE GOLD CORP.
TSX:NKG
Geology of the
JCD Property, Purcell Supergroup
Southeastern BC
Geology by D. Anderson, 2007
NAD 1983
UTM ZONE 11
NWS
NWS
DAM
Sun
Moyie
Monroe
Hia?
No Member
Hiawatha
557379
570461
YAHK FAULT
N
S
E
W
LEGEND
Middle Proterozoic
Moyie sill, dike - gabbro
Middle Aldridge - quartz wackes, turbidites
Lower Middle Aldridge - medium to thick bedded
Middle Aldridge marker unit
bedding
fault
drill location
NOBLE
MINERALS


c) Copper
KLONDIKE GOLD CORP.
TSX:NKG
Geology of the
JCD Property, Purcell Supergroup
Southeastern BC
Geology by D. Anderson, 2007
NAD 1983
UTM ZONE 11
NWS
NWS
DAM
Sun
Moyie
Monroe
Hia?
No Member
Hiawatha
557379
570461
YAHK FAULT
N
S
E
W
LEGEND
Middle Proterozoic
Moyie sill, dike - gabbro
Middle Aldridge - quartz wackes, turbidites
Lower Middle Aldridge - medium to thick bedded
Middle Aldridge marker unit
bedding
fault
drill location
NOBLE
MINERALS

Appendix 4. Seismic Reflection Cross Section

Scale 1:100000


a)
b)
Line 4
Line 16.1
1 - CDP -
Approx. Depth (km)
0.0
2.5
5.0
7.5
NE
400
1
LAS
NWS structure
1624
1501
1001
501
Manson Ck.
Charlie Ck.
Yahk
Kingsgate fault
Sundown - Meadowbrook
Time (s)
0.0
1.0
2.0
3.0
2 km