

**BC Geological Survey
Assessment Report
37905**



Ministry of Energy and Mines
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geochemical

TOTAL COST: 7162.50

AUTHOR(S): Douglas Anderson

SIGNATURE(S): Douglas Anderson

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): _____

YEAR OF WORK: 2018

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): SOWs 5716251/Oct.21 and 572481/Dec.21

PROPERTY NAME: Pakk

CLAIM NAME(S) (on which the work was done): Pakk 515473,1055600,1055598,1055665

COMMODITIES SOUGHT: Lead/zinc

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 082FN, E17, 115

MINING DIVISION: Fort Steele

NTS/BCGS: 082F09W+E/ 082F059

LATITUDE: 49 ° 33 ' 21 " LONGITUDE: 116 ° 16 ' 58 " (at centre of work)

OWNER(S):

1) RD Craig Kennedy

2) _____

MAILING ADDRESS:

1190 DeWolfe Ave.

Kimberley, BC V1A 1P5

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

1) Robert Duncan Craig Kennedy

2) _____

MAILING ADDRESS:

3300-550 Burrard St.,

Vancouver BC V6C 0B3

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

Property overlies Middle Aldridge Formation sedimentary rocks of Middle Proterozoic age. Numerous faults offset the Aldridge with lead-zinc in a cross-cutting breccia zone and weak mineralization in two drill holes.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: Pakk 36913, 36388, 34880

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			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock pXRF data collected from drill core in two holes			5662.50
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 Preparation			1500.00
TOTAL COST:			7162.50

**REPORT ON XRF MEASUREMENTS OF DRILL HOLES ON THE PAKK
PROPERTY**

FORT STEELE MINING DIVISION

PAKK CLAIMS

UTM's 551775E 5489515

Tenure Numbers: 515473, 1055600,1055598,1055665

BCGS MAP 082F059

Claim Owner: KENNEDY, RD CRAIG

Operators: T.Kennedy and RD Craig Kennedy
Reviewer: Douglas Anderson, P.Eng.
#100-2100 13th Street South
Cranbrook, B.C.
V1C 7J5

Report by:

D. Anderson, P.Eng.

Geological Consultant
#100-2100 13th St. South
Cranbrook, B.C.
V1C 7J5

Date: January 2019

**REPORT ON XRF MEASUREMENTS OF DRILL HOLES ON THE PAKK
PROPERTY**

TABLE OF CONTENTS

	Page
1.0 Introduction	3
2.0 Property Definition, History, and Background Information	3
2.10 Property Definition	3
2.20 History of Exploration	5
3.0 Regional Geology	6
4.0 Property Geology and Summary of Work Completed	6
5.0 Results of Examinations of Drill Hole Data	8
5.10 Drill Hole P-00-15	10
5.20 Drill Hole P-O4-1E	11
6.0 Discussion of the pXRF Results	11
7.0 Conclusions	12
8.0 Itemized Cost Statement	12
9.0 Author's Qualifications	12
10.0 References	13
Figures with Report:	
Pakk Location Map	3
Pakk Claim Map	4
Pakk Geology Map	8
Pakk Drill Holes on Claims	10
Appendices:	
Appendix A – Figures 1,2,3 for Elements of Vectoring	14,15,16
Appendix B pXRF Data for DDH. P-00-15 and DDH.P-04-1	17

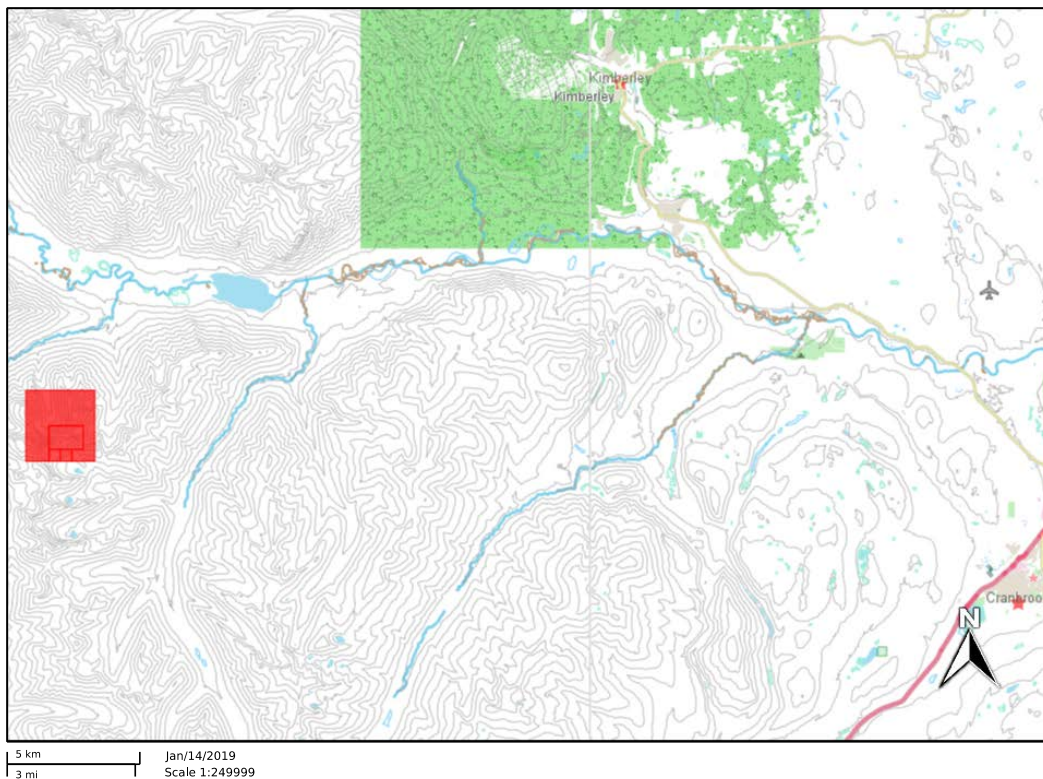
REPORT ON DIAMOND DRILL HOLES ON THE PAKK PROPERTY

1.0 Introduction

The Pakk property is a set of claims in the St. Mary valley at high elevation between Hellroaring and Meachen creeks. The area contains potential for Sedex Pb-Zn within the Aldridge Formation. Elevation ranges from 1600m to 2600m ASL with road access very limited due to the difficult terrain. The area has been explored for Sedex mineralization sporadically since the early 1980's.

Location Map:

Pakk Location Map
SW of St. Mary Lake



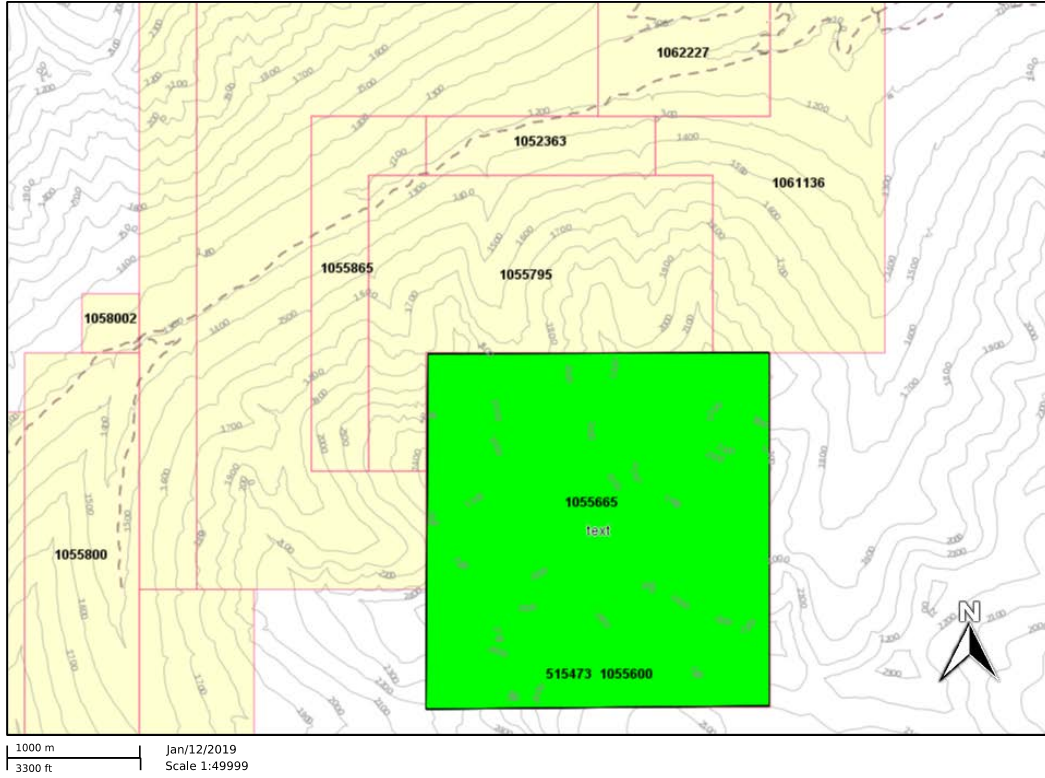
2.0 Property Definition, History and Background Information

2.10 Property Definition

The Pakk claims encompass a rugged area with the claim block now including: 515473, 1055600, 1055598, 1055665. Access is gained via the St. Mary river road then up Meachen creek and Sinclair creek roads (some overgrown now) from the north. From the east and south, the claims are accessed from the Hellroaring

creek road and a 4x4 road built onto the property for drilling in 2004. Timber is present on the lower elevations to about 2000m.

Pakk Property



Claim Name	Number	Owner	Type	Anniversary Date	Size Ha	Ownership Discuss
Pakk	1055665	RDC Kennedy	Mineral	2020/Apr/30	586.6	Client ID 113931
Pakk	1055598	"	"	"	125.72	"
Pakk2	1055600	"	"	"	20.96	"
No name	515473	"	"	"	20.96	"

Tenure for Pakk

2.20 History

The exploration history for the Pakk area is quite long but happened sporadically for various reasons. Exploration in the Pakk claim area was focused in two eras. Early exploration focused on the copper mineralization associated with the Moyie intrusions on the west side of what is now the Pakk property. Known mineralization occurred in at least three separate areas - chalcopyrite and pyrrhotite in quartz or quartz-calcite veins all within or bounding Moyie gabbro intrusions. There was excavation work on several sites with adits but none proved of any size based on the work done. Long lapses in exploration were followed in the eighties by Cominco Ltd. work in this part of the St. Mary block. Initially work focused to the north of Pakk where the Lower to Middle Aldridge Contact was established and some Sullivan Indicators were found including a large fragmental body and lead-zinc in the soil. This work was complemented by a UTEM survey and two drill holes on the flanks of the St. Mary valley. Subsequent to this work Minnova explored the south side of the Cominco ground with Pulse EM, soil geochem and drilling of two holes intersecting the Lower Middle Aldridge contact but without sufficient interest created to continue. In 1994/95 Cominco Ltd. shifted exploration further south into the south flowing drainage of Jack creek. This work entailed mapping, soil geochem, and UTEM geophysics. A single hole was drilled in the upper reaches of Sinclair Creek in 1995. In 1999, Super Group Holdings became interested in the area because of the presence of Sullivan Horizon and improved access. Prospecting led to the discovery of mineralized float of tourmalinized fragmental in the Jack Creek drainage. Subsequent mapping and prospecting established the source of the float higher in the drainage and three short holes were drilled on the gabbro-fragmental dyke complex. Drilling also tested Sullivan Horizon further south in the area of soil geochem anomalies. This deeper hole drilling was negative. More mapping established the presence of significant synsedimentary faulting and deepening of the Cominco hole (P-00-15) intersected laminated Sullivan Horizon rocks and footwall fragmental in 2001. In late 2003 Klondike Gold optioned the property and in 2004 drilled a hole to 1061.9 metres collared about 1.5 kilometres SSW of the original Cominco hole. This hole did not reach the target horizon before winter conditions necessitated a cessation of activities. In 2005, the drill hole was continued to depth as DDH. Pakk-04-1E. It eventually was stopped at 1768 metres. Sullivan Time was cored over about 100 metres from 1452 to 1541 metres as: thin bedded to laminated wackes with mixed massive argillaceous sediments with disrupted fabrics. Then variations of fragmental rocks with some highly altered albite/chlorite alteration were cored to about 1705 metres. Lower Aldridge sediments were cored to the end of the hole at 1768 metres.

In 2014, work entailed logging of the extension of the original Cominco Ltd. drill hole R-95-1 (renamed P-00-15) because the core was available at the Peavine Creek property. None of this work had been recorded as assessment work. A second hole to the east of this Cominco hole was re-logged (P-99-5) because of new thoughts about lead-zinc mineralization in lower Aldridge stratigraphy.

3.00 Regional Geology

The St. Mary area is central to the Purcell Anticlinorium, a broad generally northplunging structure in southeastern B.C. that is cored by Middle Proterozoic Purcell Supergroup rocks and flanked by Late Proterozoic Windermere Group or Paleozoic sedimentary rock. The Purcell Supergroup comprises an early synrift succession, the Aldridge Formation, and an overlying generally shallow water post-rift or rift fill sequence which includes the Creston and Kitchener Formations and younger Purcell rocks. The Aldridge is the oldest formation of the Proterozoic Belt-Purcell Supergroup. The Supergroup is a thick sequence of terrigenous clastic, carbonate, and minor volcanic rocks of Middle Proterozoic age. The basal Aldridge Formation, as exposed in Canada, is siliciclastic turbidites about 4000 meters thick. It is informally divided into the Lower, Middle, and Upper members. To the north and east in the basin, the Lower Aldridge, the base of which is not exposed, is about 1500 meters of rusty weathering (due to pyrrhotite), thin to medium bedded argillite, wacke and quartzitic wacke generally interpreted as distal turbidites. The Sullivan orebody occurs at the top of this division. To the south and west in the basin in Canada, the upper part of the Lower Aldridge is dominated by grey weathering, medium to thick bedded quartz wackes considered to be proximal turbidites. The Lower Aldridge is commonly host to a proliferation of Moyie intrusions, principally as sills. The Middle Aldridge is about 2500 meters of grey to rusty weathering, dominantly medium bedded quartzitic wacke turbidites with periodic interturbidite intervals of thin bedded, rusty weathering argillites some of which form finely laminated marker beds (time stratigraphic units correlated over great distances within the Aldridge-Prichard basin). There are several Moyie intrusions as sills within the Middle Aldridge including two of the most consistent, laterally extensive sills. The Upper Aldridge is about 300 meters of thin bedded to laminated, rusty weathering, dark argillite and grey siltite often in couplet-style beds.

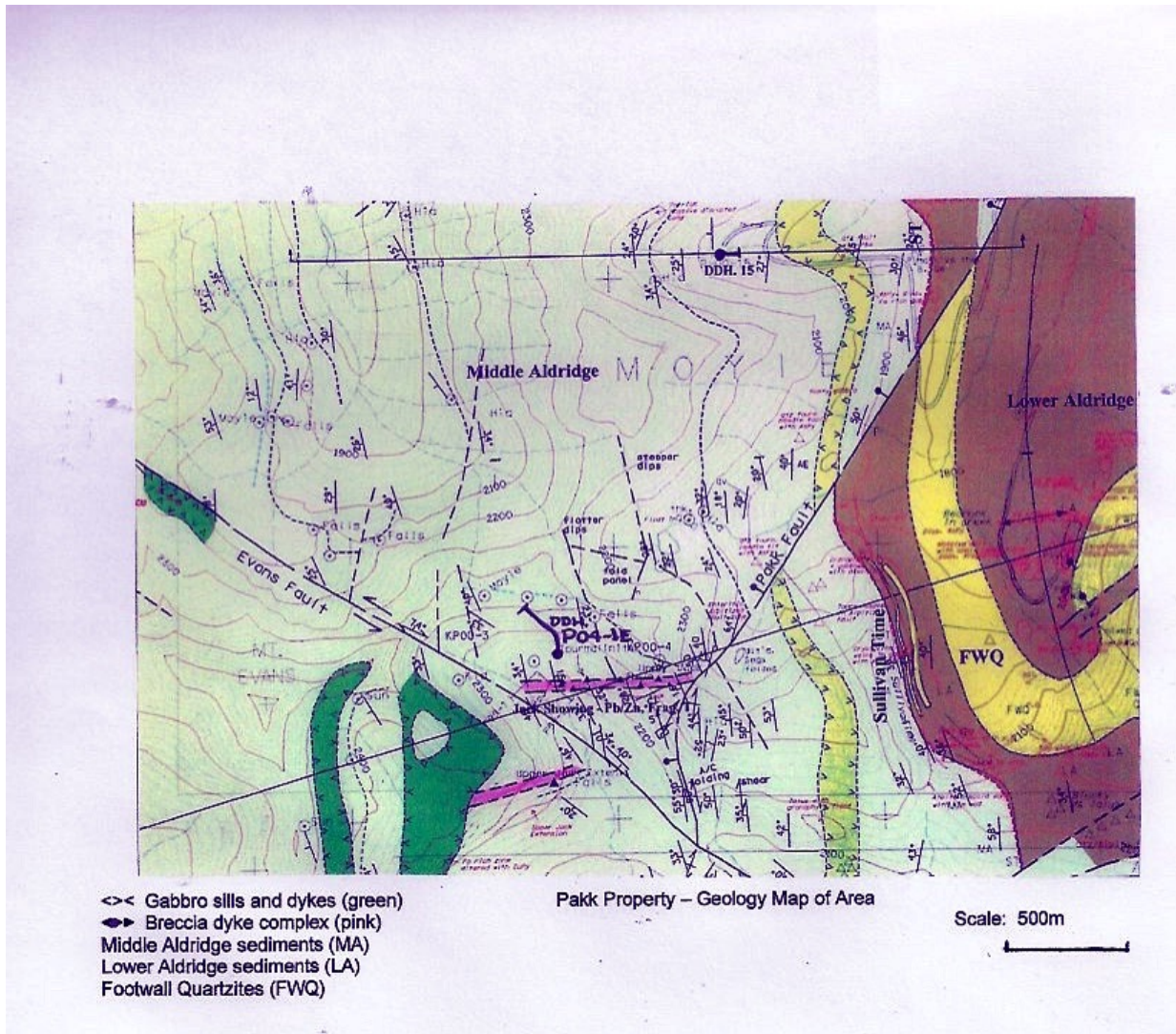
4.00 Property Geology and Summary of Work Done

4.00 Property Geology and Summary of Work Completed in 2018

The Pakk property covers dominantly Middle Aldridge division sedimentary rocks with included Moyie sills and dykes. The east side of the claims do cover some Lower Aldridge rocks and Sullivan Horizon in outcrop or subcrop. The package of Lower Aldridge - Sullivan Horizon - Middle Aldridge is generally west-dipping with the combination of rising topography and dip meaning Sullivan Horizon gets progressively deeper to the west. Middle Aldridge markers have been extensively mapped in this block providing good stratigraphic control on the property. Structurally the Pakk is more complex than initially appeared to be the case. Located in the hangingwall to the regional St. Mary fault, the Lower Aldridge through Middle Aldridge sediments and intrusives are displaced along east-

west, northwest, and northeast trending faults which have translational movements up to about one kilometer. The down-dip component appears to be several hundreds of metres. The northeast-striking Pakk fault has been established as a syndepositionally active structure which influenced sedimentation within this active sub-basin at about Sullivan Time and later. The entire package is also folded on various scales with dominant north-south fold axes. Details regarding the property which have and will continue to focus exploration efforts include Sullivan Time in surface outcrops and to increasing depths to the west. The character of Sullivan Time changes dramatically across the Pakk fault from a simple interface of Lower Aldridge to Middle Aldridge sediments to a thick fragmental footwall capped by about 15 metres of laminated subwacke characteristic of a Sullivan sub-basin facies. The second feature of interest (on a mineral potential basis) is a gabbro dyke complex at least one kilometer long which is located within the Middle Aldridge an estimated 3300 feet stratigraphically above Sullivan Horizon. This dyke incorporates gabbro patches and remnants as well as blocks of sediment fragmental and tourmalinite with incorporated sulphides. The sulphides do not contain copper minerals - chalcopyrite is consistently present with mineralization associated with Moyie intrusions. The implication is that the sulphide component to the Jack showing is not gabbro related. The current interpretation of this feature suggests it is a dyke with gabbro and xenoliths of Sullivan Indicators. The most likely source for the sulphides, fragmental and tourmalinite is Sullivan Horizon. In 2004, a drill hole directed at testing Sullivan Horizon about 1.5 kilometres SSW of the Cominco hole and collared proximal to the Jack showing at surface was stopped short of the target horizon at 1061.9 metres. This test was an attempt to vector closer to the vent source for fragmental material and a possible sulphide focal point. In 2005, a drill was mobilized to the site, up the road built in 2004, and re-positioned on the hole. The hole was continued to 1768 metres after successfully intersecting Sullivan Horizon.

Work in 2018 involved accessing the drill core from the two existing holes on the Pakk property. The first and earliest hole was a 1995 drill hole completed by Cominco Ltd. as R-95-1, a hole designed to test a UTEM geophysics response. Results at that time were viewed as negative. Later this hole (renamed P-00-15) was deepened to 820.2 metres intersecting Sullivan Time with a significant geological setting defined. In 2000 and 2004, a second stepout drill hole was ultimately completed to 1768 metres. The results from the two holes suggested potentially improving conditions to the SSW and therefore it was decided to evaluate such conclusions employing XRF sampling of the two holes.



5.00 Results of Examinations of Drill Hole Data

In 2018, the Pakk property information base was reviewed and drill core from two existing drill holes examined (P-00-15 and P-04-1E) and an XRF program was completed on drill core for portions of the two drill holes (located at the Vine property southwest of Cranbrook). Two technicians worked for four days on the XRF spot sampling which totaled 567.

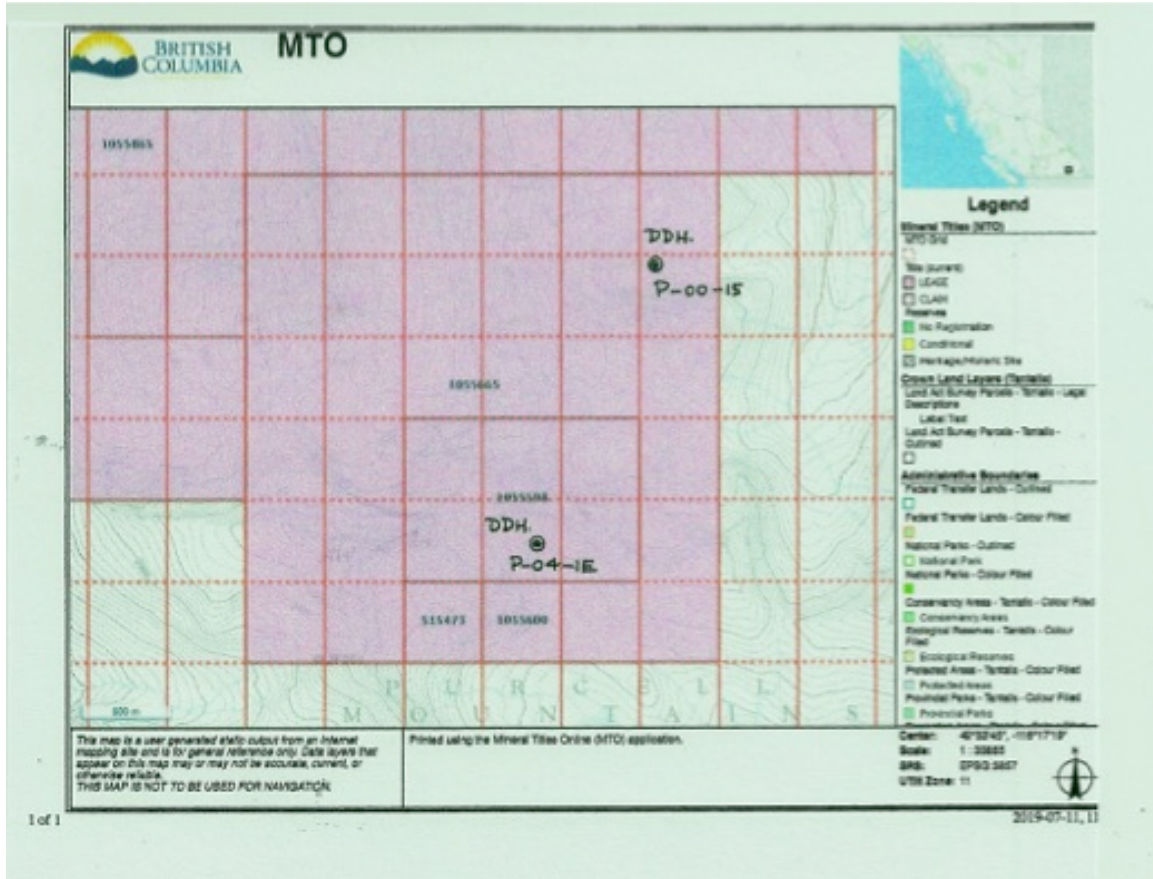
Before discussing the results of the XRF work, it is worth noting several aspects involved in use of the Portable XRF:

- a. All data collected using the pXRF should be considered semi-quantitative as the instrument analyses a small spot area and because a systematic bias is known to occur due to instrument calibration. Due to the small analytical area of the pXRF, samples were chosen to reflect the lithology

- at the selected depth and were devoid of veins and represented only one lithology, alteration, and mineralization type. Samples were at least one cubic inch and a minimum of 1.5cm thick. Based on these strict sampling protocols, the pXRF data reflects representative whole-rock samples in core. Due to the pXRF instrument's systematic bias, the content of many deleterious elements, in particular Hg, can be overestimated. However, the pattern and relative concentration (highs and lows) can be used as an effective vector to mineralization. In addition, spectral interferences influence the accuracy of element determinations. Common spectral interferences are BA-Ti(-V), Mo-U, Hf-Zr, Sb-Cd, and Pb-As. Generally, several % level concentrations are needed to cause significant interferences. In our opinion for the Purcell region, the spectral interferences have a minimal impact on the pXRF data.
- b. During the pXRF data collection a QA/QC procedure was followed, including three components. At the start of the day a calibration check, a pXRF blank (powdered SiO₂) and three certified reference materials (CRM) (in that order) were analyzed. Then, throughout the day, after 20 routine samples one pXRF duplicate was sampled twice, one pXRF blank and one CRM was analyzed and after every 50th sample a calibration check was completed. At day's end, if more than 12 samples were run another pXRF duplicate, blank, and CRM was run prior to a final calibration check. After a day of analyses the data was exported and the QA/QC reviewed for contamination and the accuracy, bias, drift assessment compared to the CRM data. As the pXRF instrument produces precise but inaccurate data the failure of the standards assessed relative to the pXRF reading +20% error (>10ppm on the blank).

The unit employed was a Olympus Delta Premium XRF Analyzer.

The two drill holes under consideration in this report are located on the Pakk Geology Map as P-00-15 and P-04-1E. They are about 1.75 kms apart on a NNE trend. Both were designed to test the Sullivan Time Interval (STI) within a graben structure established by mapping of synsedimentary faults (Pakk and Evans).



5.10 Drill Hole P-00-15 (552425E; 5491100N)

This hole was an extension of an old 1995 hole drilled by Cominco Ltd. to test a UTEM geophysics anomaly. Completed in 2001 it cored STI from 621.25 metres as laminated to thin bedded argillites and wackes to 636.5m then interbedded fragmental and bedded units to 655.85 metres. Weakly disseminated pyrrhotite was present but no significant galena or sphalerite. Alteration is widespread as modest sericite and biotite. The fragmental footwall from 655.85 to 761.9m consists of disrupted fabric, multiple fragmental types with some folded clasts with a moderate increase in pyrrhotite overall. Lower Aldridge distal turbidites were cored to end of hole at 820.2 metres.

The XRF data was separated according to stratigraphic units:

Averages were:	Middle Aldridge	Zn=60ppm	
		Pb=19ppm	
	STI (limited number of samples)	Zn=81ppm	As=4.5ppm
		Pb=17ppm	Fe=2.87%
			Mn=.048%
	Fw Fragmental	Zn=89ppm	
		Pb=25ppm	
	Lower Aldridge	Zn=173ppm (limited	

Pb=27ppm samples)

5.20 Drill Hole P-04-1E (551775E; 5489515N)

This hole was completed in two stages. Drilled to the SSW of the first hole, it was located proximal to the Jack dyke/hydrothermal breccia system hosted by lower Middle Aldridge hangingwall rocks. The hole successfully tested lower MA and the Sullivan Time interval (STI) then a footwall fragmental sequence, ending in LA. The STI extends from 1452 to 1575m including mixed bedded and disrupted sediment intervals. The footwall fragmental zone extends from 1575 to 1741.5m ranging from classic pebble fragmental to disrupted sediments to disaggregated units. Lower Aldridge sediments were cored to EOH at 1768 metres.

The pXRF data was separated according to stratigraphic units:

Averages were:	Middle Aldridge	Zn=71ppm Pb=43ppm	
	STI	Zn=121.5ppm Pb=35ppm	As=90ppm Fe=3.5% Mn=0.33%
	Footwall Fragmental	Zn=132ppm Pb=39.5ppm	
	Lower Aldridge	Zn=100ppm Pb=24ppm	

The primary purpose for the analyses of the two holes was to establish element concentration levels in each hole and then to compare results between holes searching for vectoring factors and consider them in association with the geological setting already established.

6.0 Discussion of the pXRF Results

To assess the value of further exploration, the work focused on the expected stratigraphic interval within the Aldridge Formation which could host a Sedex deposit such as the Sullivan deposit. This interval is referred to as the Sullivan Time Interval (STI). It is a somewhat unique laminated to thin bedded argillaceous interval occurring at the Lower to Middle Aldridge transition. Cognizant of the surface geological setting, the two drill holes were reviewed again, particularly in view of pXRF results. Collectively the known information could provide vectors to a deposit.

A review of the pXRF for the STI yielded potential vectors based on elemental averages for the two holes as represented on Figure 1. There are increases in the five elements (Zn,Pb,As,Fe,Mn) from Hole 15 to Hole 04-1E. Additionally the

sediments are more altered to the SSW with albite and chlorite more pervasive. Figure 2 demonstrates Pb and Zn patterns between holes with increases in Zn and a modest change for Pb, based on scattered Zn sampling. Figure 3 examines the Mn and Fe values, again showing increases in both from north to south in the two drill holes. Examining the averaged values for arsenic suggest a positive vectoring as well to the south. However, the arsenic results are based on erratic/incomplete sampling of about 40% of the core lengths.

7.0 Conclusions

The comparison of the STI from the two holes indicates a positive vectoring to the south-southwest. Any attempts of establishing vectors to a deposit are hampered by the limitation of only two holes. Drill hole P-04-1E appears more proximal to a potential target because of the increase in Zn and Pb highs within the STI, increases in Mn and Fe and the overall increase in As levels.

Combined with geological factors such as: synsedimentary faulting; a disruptive cross-cutting footwall; thickening of the STI to the south; and a cross-cutting breccia complex within the hangingwall MA which hosts significant levels of Pb,Zn,As with inclusions of tourmalinite and garnets; as well as albite and chlorite alteration; the vectoring proposed is reinforced.

Exploration should pursue the potential on the property to the west and southwest, employing deep-probing geophysics and additional drilling.

8.0 Itemized Cost Statement

XRF data was collected from July 26 to July 30.

Activity	Personnel	Days	Rate/day	Total
Data Collection	Technician	4	\$487.50	\$1950
	Technician	4	\$487.50	\$1950
Data Processing	Technician	1	\$487.50	\$487.50
Interpretation	Compiling/review	1	\$675.00	\$675.00
Labor(moving core)	BC	2	\$300.00	<u>\$600.00</u>
	TOTAL			= \$5662.50
Work with data and report writing	Geologist DA	3	\$500.00	<u>\$1500.00</u>
	GRAND TOTAL			= \$7162.50

9.0 Author's Qualifications

I, Douglas Anderson, Consulting Geological Engineer, have my office at #100 – 2100 13th St. South in Cranbrook, B.C. V1C 7J5.

I graduated from the University of British Columbia in 1969 with a Bachelor of Applied Science in Geological Engineering.

I have practiced my profession since 1969, mainly with one large mining company, in a number of capacities all over Western Canada and since 1998 within southeastern B.C. as a mineral exploration consultant.

I am a Registered Professional Engineer and member of the Association of Professional Engineers and Geoscientists of B.C., and I am authorized to use their seal.

D. Anderson

Douglas Anderson, P. Eng.

10.0 References

Assessment Report 34880 – Report on Diamond Drill Holes on the Pakk Property – by D.Anderson, August 2014

Assessment Report 36213 – Report on Geological and Geochemical (Portable XRF and Spectral) Work conducted in May and June 2016 at the Panda and McNeil Mineral Tenure – Teck Resources Ltd.

Figure 2

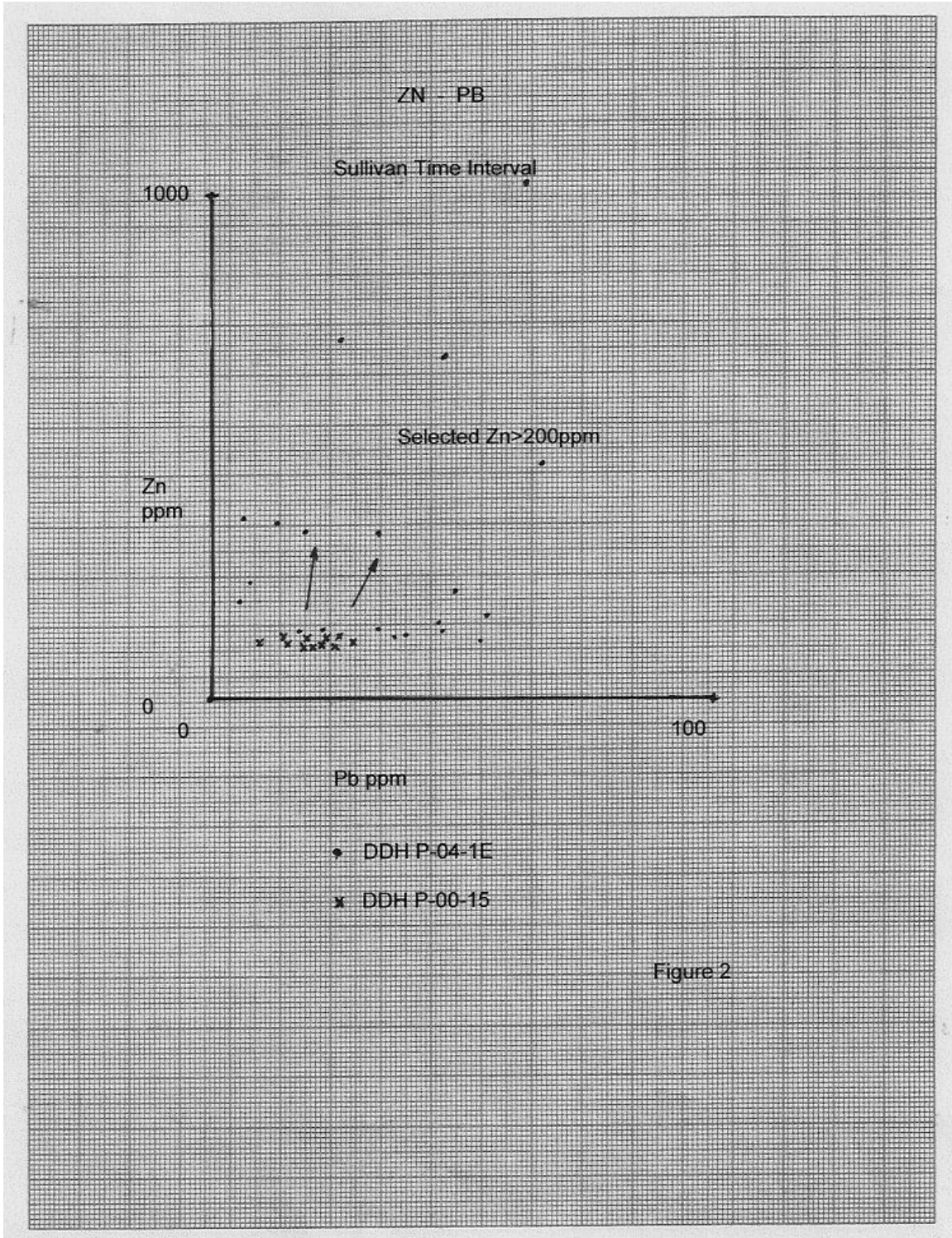
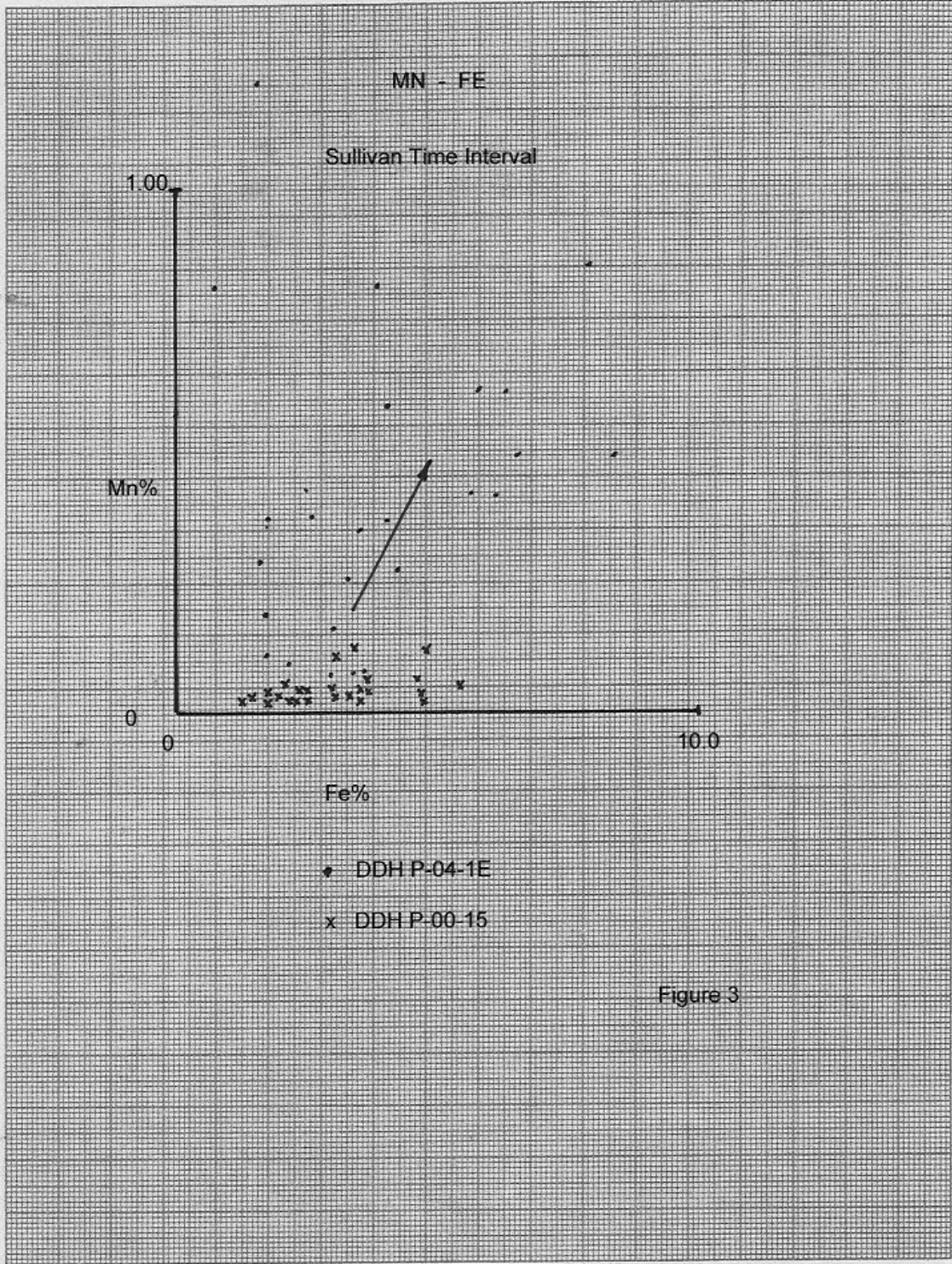


Figure 2



Appendix B – pXRF Data



