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VANCOUVER, B.C.

GEOLOGICAL REPORT

for the

NORTH FINDLAY PROPERTY

GOLDEN AND FORT STEELE MINING DIVISIONS, BC
NTS 82F/16E, 82F/16W, 82K/1E
Latitude 50°04' N. Longitude 116°12'W

Prepared for:

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February 15, 2001

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

26,494

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SUMMARY

Claims covering the North Findlay Property area form the northern part of Eagle Plains Resources North Sullivan Camp which consists of 3 claim groups – the North Findlay, the South Findlay and the Greenland Creek Properties. The claims were staked beginning in May 1995, and consist of an extensive land holding containing Precambrian miogeosynclinal sediments of the Belt Purcell Supergroup. Numerous base and precious metal showings are documented within the North Sullivan Camp property boundaries, and form a framework for further exploration. The property is considered to hold significant potential for hosting "Sedex"-type base metal deposits, based on its geology, structure, and proximity to Cominco's Sullivan deposit, located 40km to the south. The North Findlay Property hosts an extensive mineralized tourmalinite horizon which is interpreted to be stratiform – stratabound and of exhalitive origin.

The claims were staked in anticipation of a $600,000 airborne geophysical survey conducted during the fall of 1995 by the Geological Survey of Canada (GSC) and the British Columbia Geological Survey (BCGS). The North Findlay Property claims cover a total of approximately 18% of the Findlay block geophysical survey coverage.

The south eastern part of the North Findlay Property claims were explored as part of a $187,000.00 exploration program undertaken by the Miner River Resources / Eagle Plains Resources joint venture in 1996. Limited geological mapping in combination with thin section work and a single diamond drill hole identified an extensive stratabound tourmalinized horizon in the area of Tourmalinite Ridge. This type of alteration and mineralization is believed to be indicative of proximity to a hydrothermal vent system similar to that postulated as the source of the Sullivan Mine.

The North Findlay Property was optioned to Kennecott Canada Exploration Inc. in January 1997 as part of a larger land package. Although most of the Kennecott work in 1997 – 98 was focused on the South Findlay property, the Tourmalinite Ridge area and the tourmalinite horizon were evaluated by soil and rock geochemical sampling, limited mapping and a single diamond drill hole. DDH NF98-05 was collared downdip of the Tourmalinite Ridge(Doc) showing area and intersected a thick package of mineralized, tourmalinized siltstone and quartzitic siltstone. Kennecott subsequently terminated their option and the North Findlay Property was optioned to Billiton Exploration Canada Inc. in 1999.

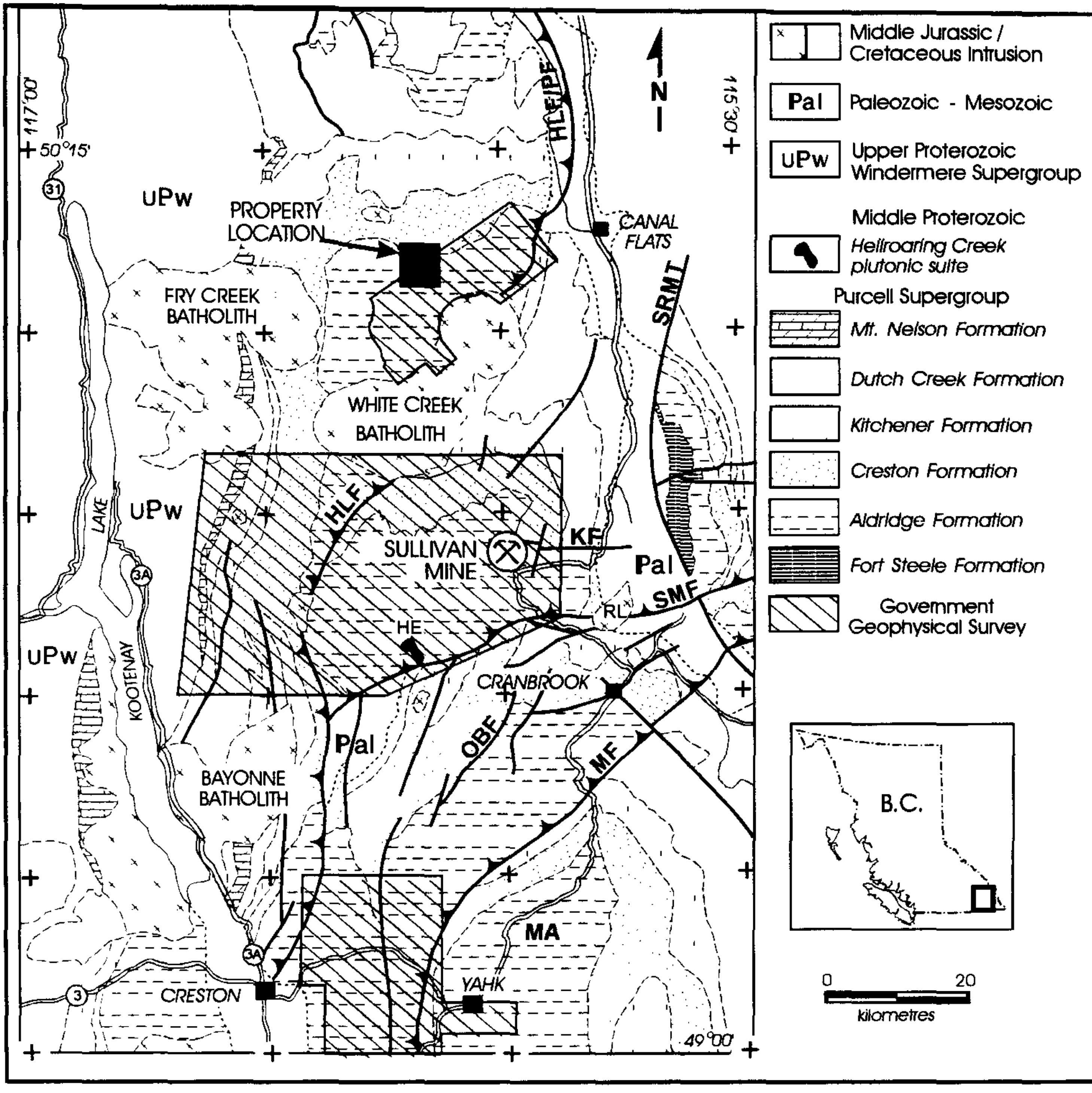
In 1999, operator Eagle Plains Resources completed a $405,544.00 exploration program on the North Findlay property. Geological mapping, soil sampling and a wide step out six hole diamond drilling program were used to better define the nature of the exhalitive Tourmalinite Horizon. The results of the program were very encouraging, and further work was recommended to locate the vent source of the mineralization and tourmaline enrichment. Eagle Plains Resources also staked more claims to cover prospective stratigraphy identified by the 1999 program. These new claims were the focus of the bulk of the 2000 exploration program. Rock and soil geochemical sampling and geological mapping defined a second, stratigraphically lower tourmalinite horizon. Geochemical results from rock samples taken from this horizon indicate that it is also metal enriched. The presence of this second horizon indicates a prolonged hydrothermal alteration event and may also indicate proximity to a major controlling structure. Further work is recommended and should be directed toward locating the vent source for the mineralization and drill testing the tourmalinite horizons.

The total cost of the 2000 program was $16,360.79.

PROPERTY DESCRIPTION AND LOCATION

The North Findlay Property consists of a total of 292 claim units staked in accordance with the Modified Grid and Two-Post Grid Systems. The claims are located approximately 30 km north of Kimberley, B.C., and lie within the Golden Mining Divisions on NTS mapsheets 82F/16, 82K1, and 82K/1E. The property is centered at 50° 04' N latitude, 116°12' W longitude (Figure 1, following page). The claims are owned 100% by Eagle Plains Exploration Ltd. Claim tenure is summarized in Table 1.

The claims cover an area of approximately 7300 hectares (18000 acres) and are located along a topographic high between the Kootenay Lake valley and Rocky Mountain Trench. Elevations range from 1140 to 2740 meters (3740 to 8990 feet), with vegetation coverage occurring at lower elevations. The property has excellent road access to the southeastern and south-central part of the claims. The main Ministry of Forestry maintained Findlay – Doctor Creek road, and a number of tributary roads including Tourmalinite Creek road provide 3 season vehicular access, while the historical 4Tops mining road is used for ATV/ 4 wheel drive truck access to the Alpine Lakes area to an elevation of 2440 m. Terrain elsewhere in the property area is accessed by helicopter from Cranbrook or Invermere, located 50 and 55 km away, respectively. Outcrop exposure is good overall, but is in some areas inaccessible due to rugged terrain. The property sees moderate precipitation, and is accessible from late-May to mid-October.



BCGS, 1998

Figure 1 - North Findlay Project- Regional Geology and Property Location Map

Table 1 – Claim status (Fig.2, in pocket)

Claim Name	Record No.	Claim Type	No. of Units	Map Number	Expiry Date
DOC 17	341800	MGS	20	82F16/82K1	NOV.20/2010
DOC 19	341802	MGS	20	82F16/82K1	NOV.20/2010
DOC 21	351384	MGS	12	82F16/82K1	NOV.20/2002
DOC 22	351385	MGS	16	82F16/82K1	NOV.20/2002
DOC 23	351386	MGS	12	82F16/82K1	NOV.20/2002
DOC 24	351399	2P	1	82F16/82K1	NOV.20/2002
DOC 25	351400	2P	1	82F16/82K1	NOV.20/2002
DOC 26	351401	2P	1	82F16/82K1	NOV.20/2002
DOC 27	351402	2P	1	82F16/82K1	NOV.20/2002
DOC 28	351403	2P	1	82F16/82K1	NOV.20/2002
DOC 29	351404	2P	1	82F16/82K1	NOV.20/2002
DOC 30	351405	2P	1	82F16/82K1	NOV.20/2002
DOC 32	352481	MGS	20	82F16/82K1	NOV.20/2002
DOC 33	352482	MGS	16	82F16/82K1	NOV.20/2002
DOC 34	366823	MGS	16	82F16/82K1	NOV.20/2002
DOC 35	366824	MGS	12	82F16/82K1	NOV.20/2002
DOC 36	366825	MGS	18	82F16/82K1	NOV.20/2002
DOC 37	368230	MGS	20	82F16/82K1	NOV.20/2002
DOC 38	368230	2P	20	82F16/82K1	NOV.20/2002
DOC 61	371698	2P	1	82F16/82K2	NOV.20/2010
DOC 62	371699	2P	1	82F16/82K3	NOV.20/2010
DOC 63	371700	2P	1	82F16/82K4	NOV.20/2010
DOC 64	371701	2P	1	82F16/82K5	NOV.20/2010
DOC 65	371702	2P	1	82F16/82K6	NOV.20/2010
DOC 66	371703	2P	1	82F16/82K7	NOV.20/2010
DOC 67	371704	2P	1	82F16/82K8	NOV.20/2010
DOC 68	371705	2P	1	82F16/82K9	NOV.20/2010
DOC 69	371706	2P	1	82F16/82K10	NOV.20/2010
DOC 70	371707	2P	1	82F16/82K11	NOV.20/2010
DOC 71	371708	2P	1	82F16/82K12	NOV.20/2010
DOC 72	371709	2P	1	82F16/82K13	NOV.20/2010
DOC 73	371710	2P	1	82F16/82K14	NOV.20/2010

Claim Name	Record No.	Claim Type	No. of Units	Map Number	Expiry Date
DOC 74	371711	2P	1	82F16/82K15	NOV.20/2010
DOC 75	371712	2P	1	82F16/82K16	NOV.20/2010
DOC 76	371713	2P	1	82F16/82K17	NOV.20/2010
DOC 77	371714	2P	1	82F16/82K18	NOV.20/2010
DOC 78	371715	2P	1	82F16/82K19	NOV.20/2010
DOC 79	371716	2P	1	82F16/82K20	NOV.20/2010
DOC 80	371717	2P	1	82F16/82K21	NOV.20/2010
DOC 81	371718	2P	1	82F16/82K22	NOV.20/2010
DOC 82	371719	2P	1	82F16/82K23	NOV.20/2010
DOC 83	371720	2P	1	82F16/82K24	NOV.20/2010
DOC 84	371721	2P	1	82F16/82K25	NOV.20/2010
DOC 85	371722	2P	1	82F16/82K26	NOV.20/2010
DOC 86	371723	2P	1	82F16/82K27	NOV.20/2010
DOC 87	371724	2P	1	82F16/82K28	NOV.20/2010
DOC 88	371725	2P	1	82F16/82K29	NOV.20/2010
DOC 89	371726	2P	1	82F16/82K30	NOV.20/2010
DOC 90	371727	2P	1	82F16/82K31	NOV.20/2010
DOC 91	371728	2P	1	82F16/82K32	NOV.20/2010
DOC 92	371729	2P	1	82F16/82K33	NOV.20/2010
DOC 93	371730	2P	1	82F16/82K34	NOV.20/2010
DOC 94	371731	2P	1	82F16/82K35	NOV.20/2010
DOC 95	371732	2P	1	82F16/82K36	NOV.20/2010
DOC 96	371733	2P	1	82F16/82K37	NOV.20/2010
DOC 97	371734	2P	1	82F16/82K38	NOV.20/2010
DOC 98	371735	2P	1	82F16/82K39	NOV.20/2010
DOC 99	371736	2P	1	82F16/82K40	NOV.20/2010
DOC 100	371737	2P	1	82F16/82K41	NOV.20/2010
HAP 1	367382	MGS	18	82F16/82K1	NOV.20/2002
HAP 2	367383	MGS	18	82F16/82K1	NOV.20/2002
HAP 1A	367399	2P	1	82K/1E	NOV.20/2002
HAP 1B	367400	2P	1	82K/1E	NOV.20/2002
HAP 1C	367401	2P	1	82K/1E	NOV.20/2002
HAP 1D	367402	2P	1	82K/1E	NOV.20/2002
HAP 1E	367403	2P	1	82K/1E	NOV.20/2002

Claim Name	Record No.	Claim Type	No. of Units	Map Number	Expiry Date
HAP 1F	367404	2P	1	82K/1E	NOV.20/2002
HAP 1G	367405	2P	1	82K/1E	NOV.20/2002
HAP 1H	367406	2P	1	82K/1E	NOV.20/2002
HAP 1I	367407	2P	1	82K/1E	NOV.20/2002
HAP 1J	367408	2P	1	82K/1E	NOV.20/2002
HAP 1K	367409	2P	1	82K/1E	NOV.20/2002
HAP 1L	367410	2P	1	82K/1E	NOV.20/2002
HAP 2A	367384	2P	1	82K/1E	NOV.20/2002
HAP 2B	367385	2P	1	82K/1E	NOV.20/2002
HAP 2C	367386	2P	1	82K/1E	NOV.20/2002
HAP 2D	367387	2P	1	82K/1E	NOV.20/2002
HAP 2E	367388	2P	1	82K/1E	NOV.20/2002
HAP 2F	367389	2P	1	82K/1E	NOV.20/2002
HAP 2G	367390	2P	1	82K/1E	NOV.20/2002
HAP 2H	367391	2P	1	82K/1E	NOV.20/2002
HAP 2I	367392	2P	1	82K/1E	NOV.20/2002
HAP 2J	367393	2P	1	82K/1E	NOV.20/2002
HAP 2K	367394	2P	1	82K/1E	NOV.20/2002
NF 1	374284	MGS	6	82K/1E	NOV.20/2002 *
NF 2	374285	MGS	18	82K/1E	NOV.20/2002 *
		TOTAL:	292	units	

* expiry date after assessment filed

HISTORY

The East Kootenay area has long been known as a mineral resource-rich area, with numerous mineral showings and mines documented over the years. The turn of the century discovery of Cominco's world-class Sullivan deposit near the present city of Kimberley put the area into focus with mineral explorationists world-wide. The Sullivan massive sulphide ore body contained 160,000,000 tonnes of ore averaging 5.6% zinc, 6.5% lead, 25.9% iron, and 67g/t silver, with a mineable lifetime of over 100 years, and a contained metal value in present dollars estimated to be in excess of 25 billion dollars. The mine is scheduled for shutdown in January of 2001.

Numerous other past-producers in the area reflect the excellent mineralogical potential of the region. These include:

1) St. Eugene Mine (1899-1929) - 1.63 million tons grading approximately 8% lead, 1% zinc, 4.4 oz/t silver.

2) Estella Mine (1951-1967) - 120,000 tons grading 4.8% lead, 9.0% zinc, 6.4 oz/t silver.

3) Kootenay King Mine (1952-1953) - 14,616 tons grading 5.3% lead, 15.1% zinc, 1.94 oz/t silver.

The regional area is also well known for the presence of once-rich placer gold deposits, though no economic hard-rock concentrations have yet been located. The Wildhorse River saw frenzied placer mining activity beginning in 1864, with over 1,500,000 ounces of gold extracted from its gravels. Placer mining operations are still in place along the river. It is also reported (unconfirmed) that Findlay Creek has seen historical placer mining activity.

PROPERTY HISTORY AND PREVIOUS WORK

Prior to establishment of the current North Findlay claims, the property has seen sporadic work, starting in the 1930's. Government assessment reports indicate exploration programs by Cominco (1977, 1984 –88), Kerr-Addison Mines (1971 – 1975), Four Tops Mining (1982 – 1985), Billiton Canada (1983 – 1984), and Teck Corporation (1992). Work included mapping, soil and rock sampling and limited ground based geophysics. The Four Tops Mining Company tested the near surface extent of the Alpine Showing with 3 short (123m total) diamond drillholes in 1984.

Claims comprising the current North Findlay Property were staked beginning in 1995. A 100% interest in the claims was sold to the Eagle Plains Resources Ltd. and Miner River Resources Ltd. joint venture in November 1995. Exploration during 1996 by Miner River involved limited geological mapping and follow-up diamond drilling in the Tourmalinite Ridge area near the historical Doc Minfile occurrence. The Doc showing area, described as a quartz vein stockwork with galena, was re-examined by C.H.B. Leitch as part of his 1996 1:5000 scale mapping project. He identified the unit hosting the veins as an apparently stratabound tourmalinite replacement horizon. The tourmalinite is associated with an extensive silver-lead-zinc-copper soil geochemical anomaly identified by Kerr-Addison in the 1970's, who concluded that the metal enrichment was related to numerous cross cutting mineralized quartz veins. Subsequent thin section work on samples of the host unit revealed coarse euhedral tourmaline in a matrix of Fe-stained carbonate (Leitch, 1996). XRF analyses of a thin section sample by Clark (Leitch, pers. comm.) identified the tourmaline as Mn rich. The tourmalinite horizon was tested by a single drillhole in October 1996. Hole TR96-01 collared in weathered tourmalinite bedrock and encountered 21.3 m of mineralized tourmalinite underlain by laminated siltstone and wacke. Metal values within the tourmalinite averaged 5gm/T Ag, 86ppm Cu, 0.39% Pb, and 243 ppm Zn from 4.3-24.5m including 11.7m at 7.6gm Ag, 134ppm Cu, 0.71% Pb, and 172ppm Zn from 12.8-24.5m. There were also high As values associated with the tourmalinite including an average of 2566 ppm from 4.3-24.5m in TR96-01. The hole was shut down due to extremely difficult drilling conditions related to the highly abrasive and fractured nature of the tourmalinite.

The claims were optioned to Kennecott Canada Exploration in 1997 as part of the Findlay Creek option. While the bulk of the 1997 Kennecott field program focused on the southern claims in the area of Doctor Creek –

Pico Basin, limited geological mapping and geochemical sampling in the Tourmalinite Ridge area confirmed the presence of a large, mineralized tourmalinite body. Kennecott tested this horizon in 1998. Diamond drillhole F98-05, collared downdip of the surface exposure, intersected a thick package of tourmalinized mudstone, siltstone and quartzitic siltstone. Within this tourmalinite horizon, 46 thin, stratabound mineralized zones associated with concordant milky quartz bands were identified. Sulphides within the zone included arsenopyrite, galena, pyrrhotite, chalcopyrite, pyrite and sphalerite. Geochemical analyses returned values of 5.5ppm Ag, 1460ppm Pb, and 42ppm Zn with anomalous As, Cd, Cu, Bi, and Mn over a 105.2m interval.

The claims were returned to Eagle Plains Resources in 1998 and further staking was carried out to enhance land position with respect to the stratigraphic location of the Tourmalinite Horizon. In 1999, the North Findlay claims were optioned to Billiton Exploration Canada Inc., who funded the 1999 exploration program, with Eagle Plains Resources as operator.

The two-phase $405,544.00 1999 program was focused on the exhalitive Tourmalinite Horizon. An initial program of soil geochemical sampling and property scale mapping defined the dimensions of the Tourmalinite Horizon in terms of strike length and thickness. The second phase consisted of a six-hole 1616.2 meter (5302.5 feet) helicopter supported diamond drilling program that attempted to define structural or mineralogical trends associated with the horizon to help locate the vent source for the exhalitive style alteration and mineralization.

Results from the 1999 work program supported the potential for the property to host a world-class sedimentary exhalitive orebody. Soil and diamond drill core geochemical sampling defined a distinct lead - arsenic – silver geochemical response associated with the Tourmalinite Horizon. The geochemical signature is strongest on the central and western part of the property and weakens significantly to the east. This strong signature coincides with exposed dip slope of the tourmalinite horizon, and the weakening trend to the east reflects less developed tourmalinization and mineralization. The anomaly trend appears to be contained within the tourmalinite horizon. Mapping by Charlie Greig indicated that the Tourmalinite Horizon is exposed on surface over a strike length of approximately nine kilometers with tourmalinization best developed in the central and western part of the property. Stratigraphically the horizon occurs within an undifferentiated Lower Creston and Upper Aldridge Formation turbidite sequence. Lithologically, the Tourmalinite Horizon consists of thin laminated to thin and medium bedded siltstone – mudstone, quartzitic siltstone and quartzite. Diamond drilling results from the 1999 program indicate that the tourmalinite horizon thins to the east and thickens to the west along the strike trace of the unit.

Conclusions from the from the 1999 exploration program on the North Findlay Property were that the alteration and mineralization that define the Tourmalinite Horizon increase westward along strike, indicating increasing proximity to the vent source. Although further work was recommended to locate the vent source of the mineralization and tourmaline enrichment, Billiton Exploration Canada Inc. elected to terminate their option agreement with Eagle Plains in 2000.

The Findlay Industrial Partnership Project

The North Findlay Property was included as part of a BCGS Open File project. The focus of the project is to provide updated 1:20,000 scale map compilations to be published at 1:50,000 scale, digital databases, and prepare descriptions of mineral occurrences for the area underlain by the Aldridge Formation and Lower Creston Formation. The Geological Compilation of Parts of the Dewar Creek and Findlay Creek Map Areas, Southeastern British Columbia, Geoscience Map 1998–4 was authored by D.A. Brown of the BCGS and released in January 1998.

GEOLOGY

REGIONAL GEOLOGY AND SULLIVAN DEPOSIT OVERVIEW (Schroeter, 1997)

(see Fig.1)

The Proterozoic Purcell SuperGroup in southeastern British Columbia constitutes a thick prism of dominantly clastic sediments exceeding 10,000 metres in thickness with the base unexposed. Earliest known sedimentation are Fort Steele Formation fluvial/deltaic sequences of quartz arenite, quartz wacke and mudstone at least 200 metres thick. Fine-grained elastic beds at the top of the formation grade into very rusty-weathering, fine-grained quartz wacke and mudstone of the Aldridge Formation (1433 Ma +/- 10 Ma), at least 5000 metres thick in the Purcell Mountains. The Aldridge Formation grades upward over 300 metres through a sequence of carbonaceous mudstone with minor beds of grey and green mudstone and fine-grained quartz wacke to the 1800 metre thick Creston Formation, composed of grey, green and maroon quartz wacke and mudstone with minor white arenite. Conformably overlying the Creston Formation are 1200 metres of green and grey dolomitic mudstone, buff-weathering dolomite and minor quartz arenite of the Kitchener Formation. The Kitchener is in turn overlain by 200 to 400 metres of green, slightly dolomitic and calcareous mudstone of the Siyeh Formation. Although poorly defined in the Purcell Mountains west of the Rocky Mountain Trench, the Siyeh is readily recognized in the Rocky Mountains and is conformably and locally unconformably overlain by 0 to 500 metres of basaltic to andesitic flows of the Purcell Lava (1075 Ma) which are taken to mark the close of Lower Purcell sedimentation (1075 to 1500 Ma). To the northwest and west in the Purcell Mountains, the Purcell Lava is only sparsely represented by weathered tuffaceous beds.

Resting with apparent conformity on the Lower Purcell rocks are about 1200 metres of grey to dark grey, calcareous and dolomitic mudstone and minor quartz wacke of the Dutch Creek Formation. This formation is overlain by about 1000 metres of grey, green and maroon mudstone and calcareous mudstone of the Mount Nelson Formation. The close of Purcell sedimentation is marked by folding during the East Kootenay Orogeny (825 to 900 Ma) and disruption of the basin by large-scale vertical faults concurrent with deposition of basal sedimentary rocks of the Windermere Supergroup.

Middle Proterozoic igneous activity in the Purcell sedimentary basin is dominated by intrusion of gabbroic sills of two ages. The oldest are the Moyie Intrusions which are most common in the Aldridge Formation. Sills and slightly discordant sheets predominate-, locally, however, dykes and step-like discordant sheets are abundant near Kimberley. Gabbroic sills can aggregate 2000 metres of thickness in a typical Aldridge section and are most abundant in the lower part of the section. The youngest event of gabbro intrusion is thought to be comagmatic with the Purcell Lavas, and is represented by abundant sills in the upper part of the Creston Formation, and in the Kitchener and Siyeh formations. The pegmatitic Hellroaring Creek stock (Middle Proterozoic) and related satellites intrude metamorphosed and deformed Aldridge sedimentary rocks and Moyie Intrusions sills, in an area about 15 kilometres southwest of the Sullivan mine. A pair of major sills, commonly separated by a hornfelsed, iron-sulfide rich package of sediment termed "granophyre", occurs regionally at the top of the Lower Aldridge from Perma, Montana (Buckley and Sears, in press) to the Sullivan area (Hamilton et al., 1983). This pair of sills, with abundant iron-sulfide rich granophyre, is prominent in the Rusty Ridge area of the North Findlay-Doctor Creek part of the property and appears to be largely responsible for the significant colour anomaly in this area. Significant hydrothermal flow associated with this pair of sills is indicated by the sulfide and wet sediment alteration, similar to that observed at sediment-covered portions of spreading centers on the ocean floor such as Middle Valley on the Juan de Fuca ridge (Stakes and Franklin, 1994) or Guaymas Basin in the Gulf of California (Einsele, 1982).

A group of two major and several smaller sills comprises the upper Moyie sill complex within the middle of the Middle Aldridge, separated from the sills marking the Lower-Middle contact by up to 1200 m of stratigraphy (Hoy et al., in prep.). These sills may be indications of a second pulse of magmatic and hydrothermal activity that affected the Middle Aldridge sediments regionally, and in particular the northern part of the North Findlay property.

Along the east side of Doctor Creek and south of North Findlay, sedimentary rocks of the Aldridge Formation are intruded by portions of the White Creek Batholith, mainly microcline porphyritic quartz monzonite to hornblende-biotite granodiorite of Cretaceous age, with minor outlying aplite and pegmatite bodies (Reesor, 1958).

Lower Purcell sedimentary rocks have undergone metamorphism to at least greenschist facies. There is a general increase in metamorphic grade with depth in the stratigraphic pile; minor areas of amphibolite facies are restricted to the cores of fold structures displaying large magnitude structural relief.

Purcell rocks are folded about north trending axes to form the Purcell Anticlinorium and the North Findlay property is located on the north flank of this structure. Folds comprising the large structure are open and gentle with north plunging axes. Some folds are overturned to the east and some display axial plane schistosity. Large areas within the anticlinorium have nearly flat-lying strata. Major faults with a history of complex movement disrupt the Purcell terrain and separate large regions further disrupted by block faulting. Two of these major faults, the Moyie and St. Mary faults, pass south of Kimberley and throughout much of their extent have a northerly trend, but then abruptly arc to the east into the Rocky Mountain Trench. Both of these faults repeat Lower Purcell strata on their north and west, upthrown sides. The Sullivan orebody occurs on the east side of this regional structure, on the east limb of an open anticline. The Middle Proterozoic Aldridge Formation (Purcell Supergroup- Lower Purcell Group), has the characteristics of a flysch sequence at least 3800 metres thick. It is composed of a monotonous and repetitious sequence of alternating beds of very fine-grained quartz wacke and mudstone and lesser amounts of very fine- to coarse-grained quartz arenite. The Aldridge Formation is metamorphosed to middle to upper greenschist facies. The Aldridge Formation in the Purcell Mountains has been divided into three map units; the Lower, Middle and Upper Aldridge. Lower Aldridge sedim- entary rocks (at least 1500 metres thick - base not exposed) are composed of a rhythmic succession of thin to medium-bedded, typically graded beds of very fine-grained quartz wacke. Interbedded with the rhythmic sequence of graded beds are laminated sequences of mudstone ranging from a few millimetres to several metres thick. Laminae and discontinuous blebs of pyrrhotite emphasize layering in the laminated mudstone and weathering of the pyrrhotite imparts a conspicuous rusty colour to outcrops. Massive to poorly bedded, elongate lenses of intraformational conglomerate occur locally near the top of the Lower Aldridge. The Middle Aldridge (2000 metres thick) is marked by the appearance of distinctive graded arenaceous beds whose lighter weathering colours contrast sharply with the rusty weathering Lower Aldridge.

Thinly bedded, rusty weathering rocks similar to those in Lower Aldridge sequences are inter-bedded with thicker,graded arenites but are definitely subordinate. The graded arenaceous rocks are mostly turbidites. Thin bedded to laminated carbonaceous mudstone becomes the dominant lithology of the 300 metre thick Upper Aldridge. The contact between the Middle and Upper Aldridge is gradational over stratigraphic thicknesses ranging from a few to tens of metres. Disseminated grains and blebs of pyrrhotite aligned along bedding occur in places in carbonaceous mudstone of the Upper Aldridge and here the rock is rusty weathering.

SULLIVAN DEPOSIT

The Sullivan orebody is located at the western edge of the Rocky Mountain Trench and on the eastern flank of the Purcell Mountains. The orebody is a conformable iron-lead-zinc sulphide lens enclosed by clastic metasedimentary rocks of the Middle Proterozoic (Helikian) Aldridge Formation, the basal formation of the Purcell Supergroup (further subdivided into the Lower Purcell Group). Regional metamorphism is upper greenschist facies. The orebody occurs near the top of the Lower Aldridge Formation and has the shape of an inverted and tilted saucer. The maximum north-south dimension is about 2000 metres and the east-west dimension is about 1600 metres. It has flat to gentle east dips in the west, moderate east to northeast dips in the centre, and gentle east to northeast dips in the east. The footwall rocks are composed of intraformational conglomerate and massive lithic wacke overlain by quartz wacke and pyrrhotite-laminated mudstone. The ore zone is overlain by several upward-fining sequences of quartz wacke and mudstone. The orebody attains a maximum thickness of 100 metres approximately 100 metres northwest of its geographic centre, and thins outward in all directions (averages 21 metres in thickness). To the east, it thins gradually to a sequence of pyrrhotite-laminated mudstone 3 to 5 metres thick that persists laterally for some distance. To the north, the orebody thins less gradually and is truncated by the Kimberley fault. To the west, the orebody thins abruptly and is cut by dyke-like apophyses of the footwall gabbro. The gabbro (of the Middle Proterozoic Moyie Intrusions) lies beneath the orebody and is typically concordant about 500 metres below its eastern edge. To the west, the gabbro rapidly transgresses upward to meet the footwall of the orebody near its western margin but, continuing westward it transgresses downward to resume its sill-like form at approximately its original stratigraphic position. To the south, within the limit of economic mineralization, thickness changes are generally irregular and abrupt.

The Sullivan orebody lies on the folded and faulted eastern limb of a broad north trending anticline. The structure plunges gently to the north and is locally asymmetric and overturned to the east. Detailed structural mapping has revealed three phases of folding. Phase I is characterized by isoclinal folds with axial planes parallel to bedding planes and north trending fold axes. Phase 2 is characterized by relatively open folds with gentle north or south plunges and with moderately west dipping axial planes. Both Phase I and 2 folds indicate easterly vergence. Phase 3 folds are associated with east dipping thrusts; axial planes have steep dips and folds have variable plunges to northwest and southeast.

The Kimberley, Ryot and Hidden Hand fault systems, the 010 degree trending Sullivan-type faults and other minor faults form an intricate mosaic disrupting the fold limb. The Kimberley and Hidden Hand faults lie across the regional structure and are generally parallel to east trending segments of the Moyie and St. Mary faults. The Kimberley fault dips 45 to 55 degrees north and truncates the ore zone to the north. With over 3000 metres of stratigraphic displacement, the fault juxtaposes rocks of the Creston and Kitchener formations against rocks of the Lower Aldridge. Displacement on the north dipping Hidden Hand fault is of the order of a few hundred metres of apparent normal dip-slip movement. The Sullivan-type faults cut the orebody with a consistent west side down normal displacement ranging from a few metres to 30 metres. The largest member of the group, the Sullivan fault, occurs near the western margin of the orebody. At the northwestern margin of the orebody, a northeast trending fault apparently truncates the westward extension of the Kimberley fault although earlier phases of movement along the Sullivan-type faults may have occurred.

The Sullivan orebody consists of sulphide rock composed of more than 70 per cent sulphides in thick, gently dipping conformable units enclosed by unaltered or altered quartz wacke and mudstone. In the western part, massive pyrrhotite containing occasional wispy layers of galena is overlain by sulphide rock in which conformable layering consists of pyrrhotite, sphalerite, galena and pyrite intercalated with beds of clastic sedimentary rock. The ore passes outward on the north, east and south to delicately-bedded sulphide rock interbedded with fine-grained clastic sedimentary rocks. Eastward across a transition zone, the orebody is composed of five distinct conformable units of well-bedded sulphide rock interbedded with clastic sedimentary rock. Each bed of sulphide rock thins eastward from the transition zone. The transition zone is commonly only a few metres or tens of metres wide. Three bedded sulphide sequences occur above the main orebody, particularly in the area of the transition zone. Locally, these are ore. Sulphide vein mineralization is present in the footwall in and adjacent to a zone of tourmalinite and very rare elsewhere. Irregular veins commonly form networks composed dominantly of pyrrhotite, galena and sphalerite. Generally minor amounts of quartz, arsenopyrite, chalcopyrite, cassiterite, tourmaline or scheelite occur in some veins. Major differences exist in footwall rocks, ore zone and hanging wall rocks in different areas of the mine.

Much of the orebody is underlain by locally derived intraformational conglomerate which is more than 80 metres thick in the west and thins to the east. Footwall rocks are cut by tabular bodies of chaotic breccia containing blocks of conglomerate and bedded sedimentary rock; these extend downward unknown distances from the sulphide footwall in the west. Footwall mineralization consisting of thin conformable laminae, veins and locally intense fracture-filling is common in the west and very rare in the east.

The footwall and hanging wall rocks and locally the orebody in the west have been extensively altered by hydrothermal solutions. A crosscutting zone of tourmalinite underlying the sulphide lens in the west is 1000 by 1500 metres across at the sulphide footwall and extends at least 500 metres beneath the orebody. Albite-chlorite- pyrite alteration occurs in crosscutting zones in the footwall tourmalinite and extends more than 100 metres into the hanging wall over the western part of the orebody. A zone of pyrite-chlorite alteration 300 metres in diameter crosscuts massive sulphide rock immediately overlying footwall albite-chlorite-pyrite alteration zones.

Extensive volumes of altered rock occur below, within and above the ore zone in the western part of the mine. Tourmalinite is included with wallrock alteration because most of the tourmalinite, except for that near the sulphide footwall, has crosscutting relations. Altered rocks unusually rich in chlorite, albite, pyrite, biotite, garnet and calcite occur in restricted crosscutting footwall structures, in a zone which crosscuts the orebody, and also occupy an extensive volume of rock in the hanging wall. Accessory minerals in altered hanging wall rocks include tourmaline, sphene, subordinate white mica, zircon, scapolite, calcite and quartz. Although minerals in altered rock have a metamorphic texture, their occurrence is interpreted as reflecting pre-metamorphic chemical modifications.

Pyrrhotite and pyrite (ratio of 7:3) are the most abundant sulphides in the Sullivan orebody. Galena and sphalerite (marmatite is the iron-rich variety) are the principal ore minerals. Minor but economically important minerals include tetrahedrite, pyrargyrite, boulangerite and arsenopyrite (deleterious). Cassiterite is an important minor constituent in the western part of the orebody. Minerals constituting less than 1 per cent include chalcopyrite, jamesonite, magnetite and less abundant scheelite and stannite. Trace or small amounts of chalcostibite and gudmundite have also been identified along with cerussite and pyromorphite. Principal non-sulphide minerals are quartz and calcite with abundant tourmaline, chlorite, muscovite, albite, pale brown to reddish-brown mica, garnet, tremolite, epidote, actinolite, cordierite and hornblende. Either quartz or calcite may make up 50 to 70 per cent of the non-sulphide suite, chlorite 30 per cent and the other minerals up to about 20 per cent.

In 1945 a pink mineral occurring as open-space fracture-fillings was found in a development raise in the southwest part of the orebody in an area where both ore and enclosing sedimentary rocks are highly manganiferous. This area is now an open pit and the pink mineral, tentatively identified as friedelite, is no longer to be found. Thirty-one years later a routine X-ray check was made from one of many hand specimens stored. Further work identified the mineral as a new mineral, mcgillite, the fifth member of the pyrosmalite group. Mcgillite is most often associated with very dark sphalerite and small amounts of boulangerite, galena, jamesonite and milky quartz.

Processing of Sullivan ore include recoverable amounts of cadmium, gold, bismuth, indium, iron, sulphur and antimonial lead and tin concentrate.

The Sullivan orebody is interpreted as a hydrothermal synsedimentary deposit which formed in a sub-basin on the Aldridge marine floor. It is located directly over conduits through which mineralizing fluids passed. Cross-strata permeability developed along synsedimentary faults and fractures; fluid escape along these led to development of chaotic breccia zones. Footwall conglomerate was extruded from breccia pipes or was laid down when locally oversteepened sediments collapsed. Boron-rich fluids percolated up the zones of cross-strata permeability, soaking adjoining footwall sediments and discharging onto the sea floor. Fluid composition and/or conditions in the sub-basin changed, and sulphides were deposited. Initial sulphide deposition over the vent area was rapid, as evidenced by lack of included clastic sedimentary rock. These features are felt to be consistent with deposition of sulphide particles which issued from the vent area. Waning stages of sulphide deposition were much less violent, and well-layered sulphides intercalated with intermittent clastic sediments became the dominant depositional style. In the upper part of both the eastern and western portions of the orebody, delicate sulphide lamellae consistent with chemical precipitation are widespread. Post-ore sodium-rich hydrothermal fluids altered tourmalinite, sulphide rocks, and hanging wall and footwall rocks over the vent area (Geological Association of Canada Special Paper 25).

Showings of sulphide mineralization were discovered in 1892. Beginning in 1900, the Sullivan mine has been a continuous producer from an original ore reserve of 160 million tons. Reserves in 1997 are estimated at 6,349,700 tonnes grading 41.1 grams per tonne silver, 6.8 per cent lead and 12.1 per cent zinc; the mine is scheduled to close on December 31, 2001.

PROPERTY GEOLOGY AND MINERALIZATION (see Fig 3 in pocket)

After C.J. Greig, 1999-2000

Ten map units of stratified clastic rocks within the Middle Proterozoic Creston, Upper Aldridge, and uppermost Middle Aldridge formations occur in a gently north-northwest dipping succession in the map area. They are described very briefly below, from youngest to oldest, followed by a brief description of the intrusive found in the area, chiefly the sill-like mafic bodies assigned to the Middle Proterozoic Moyie intrusions. With the following exceptions, correlation of the various stratified units with regionally mappable packages remains uncertain. Grey-weathering medium- and thin-bedded fine-grained turbiditic siliceous sandstone of the lowermost map unit (on the southeast) is typical of the Middle Aldridge Formation regionally, and it appears to be continuous with a very thick section of similar strata to the south. In addition, the two stratigraphically-highest units on Fig. 5, which comprise pale green-weathering, thin-bedded siliceous siltstone and very fine-grained sandstone, and which underlie the northwestern half of the property, are clearly correlative with the Creston Formation. The map units between these two sequences, however, are less readily correlated. Tourmalinized mudstones which host the mineralization on the property have been correlated with the Upper Aldridge Formation (e.g., Brown 1999), but rocks of a significant thickness down-section from them are indistinguishable from rocks of the Creston Formation above (hence the similarly-coloured hangingwall and footwall siltstone units). For this reason, the bulk of the map units were not correlated with either the Creston or Upper Aldridge formations-it is likely that facies changes in this area have blurred the distinction between them that is apparently evident elsewhere in the region.

Within all of the stratified units, bedforms (e.g., their planar-bedded nature) and locally well-preserved sedimentary structures (e.g., load casts, dewatering structures, graded-bedding, cross-laminae) suggest that they were deposited from turbiditic flows. The common pale green colours common to rocks higher in the section suggests that they were likely deposited in a more oxidizing environment than their grey to black counterparts at stratigraphically-lower levels. The uniformly fine grain size (fine- to medium-grained at its coarsest) and the apparent relative maturity of the sedimentary rocks (well-sorted and well-rounded grains, with the caveat that these are fine grained rocks, and that examination was limited to inspection of hand specimens) suggests that these deposits were relatively distal with respect to their source region, or at least well off its axis.

Map Units

Stratified Rocks

Middle Proterozoic

Creston Formation

Rocks in the northwestern corner of the area were not examined. They were assigned to the Creston Formation and described in the legend as: "undivided pale green and maroon siltstone, silty mudstone, and sandstone," which are typical Creston Formation lithologies in the region. From a distance, they appear to be uniformly thin-bedded, pale green rocks.

Creston and(or) Upper Aldridge Formation

Hangingwall siltstone

Thin-bedded and laminated, pale green siltstone and subordinate to subequal medium- to dark-grey or green-grey silty mudstone, mudstone, and local to rare very fine-grained sandstone comprise this unit. Finer-grained rocks are typically phyllitic. This package of rocks appears indistinguishable from the footwall siltstone that locally underlies the tourmalinite horizon described below. Maroon-coloured rocks, apparently common in the Creston Formation elsewhere in the region, are absent.

Hangingwall sandstone

Very fine-grained, thin- to medium-bedded arkosic(?) quartz arenite, with subordinate siltstone and mudstone, commonly forms a resistant ledge stratigraphically above the tourmalinite horizon. On the northeast, sandstone appears to be subordinate in abundance to finer-grained lithologies.

Tourmalinized mudstone

Black to very dark grey tourmalinized mudstone includes abundant and distinctive very fine-grained to fine-grained tourmaline needles. This lithology characterizes the unit, but is commonly subordinate in abundance to siltstone, which may be partially tourmalinized(?). Also included in the unit is local sandstone (commonly albitized?), and the millimetre- to centimetre-thick quartz lamellae which carry many of the sulphides within the tourmalinite. The tourmalinite horizon has been relatively well-defined as far northeast as Chore Boy Creek, but was not positively identified on the ridge that for much of its length bounds the creek on the north. It was therefore interpreted to underlie the creek itself, in part because dark-coloured, very fine-grained rocks, thought to consist of laminated tourmalinite, were found in association with varicoloured phyllitic mudstone and siltstone (a common lithology in the footwall of the tourmalinite horizon farther southwest) near where Chore Boy Creek enters Findlay Creek. To the southwest, the location of the horizon is well-constrained as far as the upper reaches of North Shrink Creek, where it outcrops in cliffs along the north side of the valley. Its presence around the head of the basin and on the western part of the ridge south of North Shrink Creek is speculative, although observations of local tourmaline in previous work provide support for this interpretation. 2000 mapping identified a stratigraphically lower "true tourmalinite" horizon in the area of Shrink Lake-Chicago ridge.

Footwall sandstone

Fine-grained arkosic quartz arenite occurs in the central part of the area near Tourmalinite and Rocky Top ridges. As is the case for its counterpart in the hangingwall, sandstone seems to be absent to the northeast. It is characterized by the presence of a set of amalgamated medium-bedded, turbidite sandstone beds, locally to one metre in thickness. Sandstones are commonly albitized, and are interbedded with subordinate siltstone and mudstone; the mudstone locally appears to be tourmalinized.

Crenulated phyllitic mudstone and siltstone

Varicoloured (typically pale green to dark grey-green), chloritic(?) and(or) sericitic, locally silicified(?) phyllitic mudstone and siltstone are common lithologies in the footwall of the tourmalinite horizon. Small scale crenulation folds are a common and characteristic feature, as are minor folds on scales of centimetres to several metres.

Footwall siltstone

Laminated and thin-bedded, pale green siltstone and subordinate to subequal medium- to dark-grey or green-grey silty mudstone, mudstone (commonly phyllitic), and local to rare very fine-grained sandstone are similar to rocks of the "Hangingwall siltstone" unit in the hangingwall of the tourmalinite horizon. A possible distinction is there is a somewhat greater proportion of sandstone in the footwall siltstone.

Green sandstone

Fine-grained, pale green to buff-weathering, thin and medium-bedded siliceous sandstone is interbedded with subordinate siltstone and mudstone in this unit. The sandstones appear to pinch out to the northeast, and it is not certain whether or not they are present to the southwest.

Middle and(or) Upper Aldridge Formation

On Tourmalinite Ridge, a relatively thin, dark grey mudstone unit locally separates overlying green and grey-green rocks from underlying dark grey and commonly sandy rocks that are likely correlative with the Middle Aldridge Formation. The mudstone is typically laminated and locally phyllitic.

Middle Aldridge Formation

Relatively resistant, medium-bedded, fine-grained and fine- to medium-grained, dark grey turbidite sandstone comprises the bulk of this unit. It is interbedded with common dark grey siltstone, silty mudstone, and mudstone. Local 0.5 to 1.5 metre thick sandstone beds are also present.

Intrusive Rocks

Middle Proterozoic
Moyie Intrusions

Several sills and subordinate dykes of fine- to medium-grained, equigranular to well-foliated gabbro, gabbro-diorite and local diorite occur in the area mapped. The largest occur in the southern part of the area but not examined in this program. A number of sill-like intrusive bodies occur higher in the section, but were too thin to be shown on Figure 5; those that are shown are somewhat thicker (up to about five metres thick), and their thickness is exaggerated on the map. The contractional fault in the west-central part of the area shown on Figure 5 is in part nucleated on he upper contacts of these intrusions

In addition to the Moyie intrusions, a number of thin (up to 2 metres thick; typically <1 metre) dark brown-green, biotite-bearing lamprophyre dykes occur in the area. They trend to the northwest and are typically very steeply-dipping.

Structural Geology

In general, the structure of the area is straightforward, with gently north-northwest dipping stratigraphy warped by north-northwest trending, gently plunging open and locally tight folds. This is in accord with the regional setting, because the area lies on the generally gently-dipping west limb of the core of the Purcell Anticlinorium, a large north-plunging feature formed during the Mesozoic (Middle Jurassic to Early Tertiary) development of the Rocky Mountain Thrust and Fold belt.

Folds are the most prominent structural features on the property. In general they have longer and more gently-dipping western limbs and are easterly vergent. The common minor folds on the property mirror this trend, and both may be considered to be sympathetic folds formed during the structural development of the anticlinorium. Cleavage and(or) foliation is common in the area, particularly within the finer-grained lithologies. It typically dips more steeply than bedding, and in a somewhat more westerly direction, and it lies parallel to the axial planes of minor folds. Locally, a second phase cleavage is developed; it appears, in part, to be associated with folds adjacent to high angle normal faults (e.g., along the east-trending ridge near the southwestern corner of the area.

The thrust fault mapped in the west-central part of the area is largely inferred. In several places in its immediate hangingwall, tight, asymmetric easterly-vergent folds with wavelengths of up to tens of metres occur. In its footwall are several metre-scale sill-like bodies of gabbro-diorite. Stratified rocks beneath the sills appear not to have been affected by the folding immediately above them, with the inference being that the folds were formed during detachment along the dyke contact. Displacement on the fault is essentially unconstrained, but the limited amplitudes of the folds suggest that it is not great. The presence of other similar fold trains in the area is suggestive of similar easterly-vergent low-angle structures, but the lack of well-defined stratigraphy, make them difficult to identify.

Galena Lead Isotope Study

As part of the Kennecott Canada 1998 exploration program, galena samples were collected throughout the North Findlay - Doctor Creek - Greenland Creek area and sent to the Geochronology Laboratory at the University of British Columbia for analysis. Samples on the North Findlay property were collected from the Tourmalinite Ridge and Four Tops showings and from drillhole F9805. Isotopic compositions were determined using a modified VG54R thermal ionization mass spectrometer and the results were plotted on standard Pb /Pb diagrams. A shale curve calculated using data from sediment hosted stratiform deposits in the miogeocline of the Canadian Cordillera was included for reference. Galena samples from F9805 drill core (Zone 2 F98.05 177.0m and Zone 30 F9805 213.0m) and from one of the from Tourmalinite Ridge rock samples (VR31243A) plot within the Sullivan cluster. The Four Tops sample arrears to have a younger age, possibly representing remobilization.

Regional Airborne High-Resolution Geophysical Survey (Appendix IV)

The North Findlay claims comprise approximately 25% of the Findlay Block area, one of three areas covered by a 1995 multi sensor airborne geophysical survey funded by the government of BC and supervised by the GSC. The helicopter survey recorded total field magnetic, gamma-ray spectrometric and VLF data. Data gathered from the Sullivan-North Star Corridor over areas of known mineralization was used to establish signatures for Aldridge formation hosted massive sulphide deposits. It was found that elevated magnetic anomaly values, high electrical conductance, and low eTh/K ratios are characteristic of mineralization and sericitic alteration in the Sullivan-North star corridor. Areas with high eTh/K ratios detected by the radiometric survey are interpreted to reflect the presence of albite rich breccias and albitic alteration zones and may be used to define macro structures.

In the North Findlay area, the survey located coincident Electromagnetic and VLF anomalies in the area south of Shrink Lake basin.(Fig.3). Radiometrics(Fig.C20-5b, Appendix IV) indicate the presence of a large structure in the western part of the Findlay Creek Survey Area. This N-S trending structure is defined along the contact between a high eTh/K zone in the east and lower eTh/K values in the west. A similar signature in the Yahk area covered by the Regional Airborne High-Resolution Geophysical Survey defined the trace of the Iron Range Fault zone(Fig.C20-5b, Appendix IV) and reflects the albite rich breccia within the fault zone as well as an extensive albitic alteration zone adjacent to the fault. In the North Findlay area, the trace of the structure is coincident with the location of the mapped Magnetic and VLF anomalies structure(Fig.3). It is believed that the structure represents a major Proterozoic feature that may be a control or conduit for hydrothermal fluids.

Numerous mineralized showings have been documented within property boundaries, and are included within Minfile reports. A brief summary of these occurrences is provided below:

Alpine (Alp, Rocky Top, Four Tops) 082KSE08

Located at elevation 2470m approximately 2.5km north of the Tourmalinite Ridge area within the Doc 23 claim group. Mineralization consists of galena-sphalerite-chalcopyrite in a quartz vein breccia of probable early to mid Cretaceous age which intruded pre-Cambrian aged rocks close to the contact of the upper Aldridge and Creston Formations. A grab sample of mineralized breccia taken by Eagle Plains / Miner River in 1996 returned values of 3.07% lead and 11.85% zinc.

Tourmalinite Ridge / DOC 082KSE060

This exposure is located at elevation 2450m along an east-west trending ridge approximately midway between the prominent bends in Doctor and Findlay creeks. The showing consists of a extensive tourmalinite replacement body hosted by Upper Aldridge – Lower Creston tourmalinized siltstone/mudstone - quartzitic siltstone oriented 070/30° N. The tourmalinite is exposed on surface over a 1000m by 500m area and was identified by Leitch in thin-section work in 1996. Initial surface mapping indicated a tourmalinite thickness of up to 60-70m. The tourmalinite is associated with an extensive silver-lead-zinc-copper soil geochem anomaly identified by Kerr-Addison in the 1970's, who concluded that the metal enrichment was related to numerous cross cutting mineralized quartz veins. The historical DOC showings, described as a quartz vein stockwork with pyrite, galena, sphalerite and arsenopyrite likely forms part of the Tourmalinite Ridge Showing. Historical samples include a grab of quartz band material with sphalerite and galena that returned 457gm/t silver, and 31.1% lead. A channel sample taken by Eagle Plains / Miner River in 1996 near DDH T9601 averaged 2.38gm/t silver, 1895ppm arsenic, and 2263ppm lead over 180m length across the exposed Tourmalinite Horizon. The sampling purposely excluded any quartz material.

2000 PROGRAM (see Fig.2,3 in pocket)

The 2000 field program was focused on geological mapping, prospecting and soil sampling in the area of Shrink Lake. A total of four field days (July 26th-29th, 2000) were spent in the North Findlay area in an attempt to gain a better understanding of the distribution of tourmalinized upper Aldridge Formation metaclastic rocks along strike to the southwest from those mapped in 1999 near Tourmalinite Ridge. The aim was to identify and sample tourmalinized mudrocks, and to run soil lines across the prospective tourmalinized stratigraphy. Mapping and soil sampling traverses were made from a fly-camp along what is known locally as Chicago Ridge, which trends north-northwestward in the area west of Shrink Lake. Charlie Greig, PhD. was contracted to extend his geological mapping coverage of the North Findlay-Greenland Creek area.

1: 5000 scale geological mapping was completed over an area of approximately 40 square kilometers (15 square miles). A total of 118 soil samples, 1 silt sample and 32 rock samples were collected. Soil samples were collected at 50m spacings in areas identified by geologic mapping. Soil and rock samples were shipped to Bondar-Clegg Laboratories in North Vancouver, B.C. where they were analyzed for 30-element ICP using aqua-regia digestion. High-grade samples were further fire-assayed. All samples were collected, handled, catalogued and prepared for shipment by Toklat Resources and Eagle Plains Resources staff. Helicopter charter for the program was through Bighorn Helicopters based in Cranbrook, B.C., who provided a Bell 206B3 Jet Ranger to mobilize personnel and gear to site.

All exploration and reclamation work was carried out in accordance to Ministry of Environment, Ministry of Mines and WCB regulations.

The total cost of the 2000 program was $16,360.79.

2000 RESULTS (see Fig.2,3 in pocket)

Geological mapping and geochemical sampling completed during the 2000 North Findlay field program extended the both the thickness and strike length of the tourmalinite alteration zone. Geological mapping indicates that tourmalinization occurs over a tremendous thickness. In the Shrink Lake–Chicago Ridge area, stratiform "laminated tourmalinite", characterized by laminated and crenulated, dark grey to black, tourmalinized mudstone which lacks visible tourmalinite needles, occurs with local "true tourmalinite", which is also stratiform and consists in part of distinctive compact mudstone that contains abundant mm-scale needles of tourmaline that are visible to the naked eye. The two types of tourmalinite occur throughout a stratigraphic thickness approaching one kilometre. The tourmalinized rocks occur from at least as low in the stratigraphy as the top of Middle Aldridge Formation to a level equivalent to the tourmalinized rocks on Tourmalinite Ridge (uppermost Aldridge to lowermost Creston Formation?).

Geochemical results from the 2000 program affirm the Sedex-type geochemical signature of the tourmalinized mudstone package. Soil samples collected in the Shrink Lake-Chicago Ridge area returned highly anomalous values in copper-lead-zinc-barium-manganese associated with weakly anomalous silver and arsenic values. Typically, anomalous samples show continuity over a series of stations. Rock samples taken in the Chicago Ridge-Shrink Lake area also reflect anomalous metal enrichment. The anomalous samples appear to coincide with the mapped trace of the lower tourmalinite horizon. A complete list of geochemical results is found in Appendix III.

CONCLUSIONS AND RECOMMENDATIONS

(see Fig.3 in pocket)

The North Findlay Property covers a stratigraphic package which is known to host the Sullivan silver-lead-zinc deposit, a world-class orebody located 30km to the south. Beginning in 1996, exploration work has focused on the evaluation of a mineralized stratabound – stratiform tourmalinite replacement body. Craig Leitch first identified the Tourmalinite Horizon in 1996 in the area of the Doc Minfile showing, now referred to as Tourmalinite Ridge. The tourmalinite was recognized in a polished thin section of the unit, which revealed coarse euhedral tourmaline in a matrix of Fe-stained carbonate. Of further interest, reconnaissance microprobe analysis (Clark, 1996) shows that the tourmaline is intermediate dravite-schorl in composition, with Fe:Fe+Mg ratio around 0.4-0.5, very similar to tourmaline at Sullivan. Tourmalinite is believed to be indicative of boron enrichment in sediments close to a hydrothermal vent system(Leitch and Turner,1992). At the Sullivan Mine, an extensive tourmalinite alteration zone is found in the immediate footwall of the orebody. Radiometric age dating of galena samples from outcrop and drill core on North Findlay Property plot within the age cluster associated with the Sullivan deposit. Interpretation of geophysical data from the 1995 multi-sensor Airborne Geophysics Survey indicates that the western part of the North Findlay Claims has both coincident VLF-EM anomalies and a large structural feature associated with the trace of the lower "true tourmalinite" horizon.

Prior to the 1999 Eagle Plains/ Billiton exploration program, the Tourmalinite Horizon was tested by two diamond drillholes : Miner River Resources / Eagle Plains Resources DDH TR9601 and Kennecott Canada Exploration Ltd. DDH F9805. Both holes intersected tourmalinized siltstones and quartzitic siltstones with anomalous silver, arsenic, lead and zinc values.

1999 work by Eagle Plains Resources continued comprehensive evaluation of the Tourmalinite Horizon using 1:5000 scale property mapping, soil geochemical sampling, and diamond drilling. Mapping by Charlie Greig indicated that the Tourmalinite Horizon was exposed on surface over a strike length of approximately nine kilometers with tourmalinization best developed in the central and western part of the property. Stratigraphically the horizon occurs within an undifferentiated Lower Creston and Upper Aldridge Formation turbidite sequence. Lithologically, the Tourmalinite Horizon consists of thin laminated to thin and medium bedded siltstone – mudstone, quartzitic siltstone and quartzite. Diamond drilling results from the 1999 program indicate that the tourmalinite horizon thins to the east and thickens to the west along the strike trace of the unit. The Tourmalinite Horizon intersected in DDH9903 in the east – central part of the property was 36.9 meters thick. Intersections in the other 1999 drillholes show increasing thickness to the west. In DDH NF9905, collared approximately 4 km west along strike from 9903, the Tourmalinite Horizon was 93.02m thick, with a further 31.18 meters of mineralized footwall rocks. This compares favorably with the 1998 Kennecott hole that intersected 105.2m of tourmalinized mineralized sediments 600m downdip of NF9905.

Diamond drilling and soil geochemistry also defined geochemical and geological trends associated with the Tourmalinite Horizon. The silver – arsenic – lead – zinc soil geochemical signature associated with the tourmaline alteration zone was best developed in the central and western part of the property and was weakest to the east. The geochemical anomaly appears to be widest in the central part of the property, and this is likely related to topographical effects rather than reflecting local increased thickness. Hole NF9903 intersected a thin package of weakly tourmalinized mudstones and siltstones, with thin concordant milky quartz bands. The tourmalinized zone was weakly anomalous in silver, arsenic and lead, and the dominant sulphide mineral was pyrite. The remainder of the 1999 drillholes were drilled west along strike from 9903, and show an increase in metal content, tourmalinization, density of concordant quartz bands and development of turbidite textures, with the exception of NF9906 which was collared below the known Tourmalinite Horizon.

Results from the 2000 North Findlay field program continue to support the potential for the property to host a world class sedimentary exhalitive orebody. Mapping by Charlie Greig extended the known strike length of the tourmalinite alteration zone to at least 11 kilometers. Greig also mapped tourmalinite altered mudrocks over a stratigraphic thickness approaching 1 kilometer. The main "true tourmalinite" discovered in this latest phase of mapping occurs at a much lower stratigraphic level than that on Tourmalinite Ridge. Its' aphanitic nature and higher tourmaline content may indicate a period of more intense exhalitive alteration. The lower true tourmalinite tracks through the lower reaches of Shrink Lake basin and crosses Chicago Ridge near the southernmost part of the area mapped. Like its counterpart on Tourmalinite Ridge, it is highly anomalous in its Sedex-type geochemistry (Pb, Mn, Ba, Ag, and As) and it is more enriched in Zn and Cu. This is more accurately reflected in the soils than in the few rock samples collected from the "true tourmalinites" in the area, but its stratiform character and Sedex signature is difficult to deny from the combined geochemical and geological database of the current phase of work and that of previous programs. Thin tourmalinized beds described in the drill log for drillhole NF9906 likely represent tourmaline alteration in the hangingwall of the lower tourmalinite horizon. The projection of the lower tourmalinite horizon corresponds well with the position of airborne magnetic and EM anomalies, as well as the inferred trace of a major structure identified by the government airborne geophysical survey.

The two types of tourmalinite occur throughout a stratigraphic thickness approaching one kilometre. The tourmalinized rocks occur from at least as low in the stratigraphy as the top of Middle Aldridge Formation to a level equivalent to the tourmalinized rocks on Tourmalinite Ridge (uppermost Aldridge to lowermost Creston Formation?). Their extent suggests that tourmalinization occurred over a considerable period of time, and that the structure from which the hydrothermal fluids emanated was itself long-lived. Overall, there appears to be an increase in the thickness of tourmalinized strata to the southwest, which suggests further that the structure controlling the alteration may lie in that direction. Considering that the tourmalinized rocks occur over a strike length of at least eleven kilometres, that the associated geochemistry has a distinct Sedex-type signature, and that tourmalinization likely affected the rocks shortly after deposition, the tourmalinites in the area represent a remarkable alteration footprint. That footprint could well reflect proximity to a major mid-Proterozoic structure, and perhaps a major syngenetic sulphide deposit. It should be noted that mapping by Charlie Greig on Eagle Plains Resources' Greenland Creek property directly south of the western part of the North Findlay property indicated facies changes within the Lower Aldridge Formation that suggest the presence of long-lived, prospective, syn-depositional structures.

A $400,000.00 field program is recommended for the North Findlay Property. The objective of the program is to locate the vent source for exhalitive style tourmalinite alteration and mineralization defined by diamond drilling to date. Further mapping and soil sampling is recommended for the drainages and ridges immediately west of Chicago Ridge. At the very least, several recce mapping and soil sampling traverses should be run along the ridgetops. These would best be run by someone with a good eye for "true tourmalinite" and "laminated tourmalinite", and by someone with a good understanding of the property stratigraphy and how it is affected by structures in the area. Silt sampling is also recommended, since the excellent property database not only provides a ready yardstick for comparison, but also clearly pinpointed the mineralization on Tourmalinite Ridge. In addition, some petrographic work on the varieties of "laminated" and "true" tourmalinite may be valuable for comparison.

Three possible diamond drill locations (in order of priority: A, B, C) are posted on Figure 3. Two of the proposed holes (A and B) would test the downdip nature of the lower "true tourmalinite" horizon in the area of Shrink Lake-Chicago Ridge. Hole A would test the tourmaline horizon in the area of the coincident VLF-Mag anomaly and both holes would test the horizon proximal to a large structure inferred from geophysical interpretation. Hole C would test the upper tourmalinite horizon downdip from 1998 and 1999 drillholes. The hole could also be deepened to intersect the lower "true tourmalinite" horizon if warranted by results from Holes A and B. All holes should be drilled at an azimuth of approximately 150°, with an angle of 60-70° depending on local bedding observations. More detailed mapping, prospecting, and sampling of the tourmalinized rocks in the areas of potential drillsites is also recommended.

A camp should be established near Shrink Lake to allow for access by foot to the drillsites A and B. This will save considerable air support expense. The cabins should be constructed to allow for transportation to the Hole C camp location using an A-star helicopter. It is also recommended that a helicopter be based in camp to reduce excessive ferrying charges from the helicopter base. A budget for the proposed work is on the following page.

PROPOSED BUDGET FOR 2001 NORTH FINDLAY EXPLORATION PROGRAM

Diamond Drilling :2250m @ $100.00/m	$225,000.00
Personnel / Contractors	$45,000.00
Consultants	$15,000.00
Helicopter Support	$45,000.00
Mob/Demob	$6,000.00
Analytical	$17,000.00
Meals/Grocery	$6,000.00
Truck/Equipment Rentals	$8,000.00
Fuel (Diesel, Gasoline, Propane)	$5,000.00
Field Supply/Camp Materials	$8,000.00
Communications	$3,000.00
Miscellaneous	$10,000.00
Report/Reproduction	$7,000.00
Sub-Total :	$400,000.00
10% Contingency :	$40,000.00
TOTAL:	$440,000.00

NOTE : all values in $CAN

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EMPR Minfile #082FNE 089, 090, 092,107, 112, 122 EMPR Minfile #082KSE 041, 053, 060, 063

APPENDIX I

Certificates of Qualification

CERTIFICATE OF QUALIFICATION

I, Charles C. Downie of 122 13[th] Ave. S. in the city of Cranbrook in the Province of British Columbia hereby certify that:

1) I am a Professional Geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia (#20137).

2) I am a graduate of the University of Alberta (1988) with a B.Sc. degree and have practiced my profession as a geologist continuously since graduation.

3) This report is supported by data collected during fieldwork as well as information gathered through research.

4) I hold 125,000 shares of Eagle Plains Resources; I Hold an option to purchase a further 25,000 Common Shares of Eagle Plains at $0.25 per share.

Dated this 15th day of February, 2001 in Cranbrook, British Columbia.

Charles C. Downie, P.Geo.

CERTIFICATE OF QUALIFICATION

I, Charles J. Greig, of 250 Farrell St. in the city of Penticton in the Province of British Columbia hereby certify that:

2) I am a graduate of the University of British Columbia, with a B.Comm. (1981), a B.Sc. (Geology, 1985), and an M.Sc. (Geology, 1989). I have practiced my profession as a geologist continuously since graduation.

3) This report is supported by data collected during fieldwork as well as information gathered through research.

4) I do not have any direct interest in the North Findlay Property and I do not currently hold any shares of Eagle Plains Resources Ltd.

Dated this 15th day of February, 2001 in Penticton, British Columbia, Canada.

Charles J. Greig

APPENDIX II

Statement of Expenditures

STATEMENT OF EXPENDITURES : 2000 NORTH FINDLAY EXPLORATION PROGRAM

The following expenses were incurred on the North Findlay property, Golden Mining Division, for the purpose of mineral exploration between the dates of June 01 to September 15th, 2000.

PERSONNEL

T. Termuende, P. Geo: 2.0 days x $425/day	$850.00
C.C. Downie, P.Geo : 1 field day x $425/day	$425.00
B. Robison, Geological Technician: 5.5 days x $225/day	$1,237.50
Jesse Campbell, Geological Technician: 3.5 days x $250/day	$787.50

EQUIPMENT RENTAL

4WD Vehicle: 4.0 days x $50.00/day	$200.00
Mileage: 320km x $.20/km	$64.00
5-Ton Trailer: 3.0 days x $100.00/day	$300.00
Other(radios, camp gear)	$82.08

OTHER

Meals/Accommodation:	$557.32
Fuel:	$229.16
Consultants:	$2,782.00
Helicopter Charter:	$2,332.87
Shipping:	$66.27
Maps/ Orthophotos:	$1,292.02
Analytical:	$2,374.69
Handling Fees: Toklat Resources 10% on disbursements	$971.64
Miscellaneous GST:	$308.74
Report Writing/Reproduction(estimate):	$1,500.00
Total:	$16,360.79

TOTAL GST : $944.39

APPENDIX III

Analytical Results

TITLE 11-08-00 09.36 45 V00-01511 0 T TERMUENDE 08/08/00
CLIENT TOKLAT RESOURCES INC
PROJECT N FINDLAY #SAMPLES 32
SPECIAL VALUES
IS Insufficient Sample
-9 No Value Recorded
Values above the upper limit are shown as +uplimt
Values below the lower limit are shown as -lolmt (ie not detected)
DETERMINATIONS

ELNAME	METHO	ECO	UNI	#SAM	LOLMT	UPLIMT	COMMENTS
01 Ag	ICP	EA1	PPM	32	0 2	200 0	Results Reported
02 Cu	ICP	EA1	PPM	32	1	10000	Results Reported
03 Pb	ICP	EA1	PPM	32	2	10000	Results Reported
04 Zn	ICP	EA1	PPM	32	1	10000	Results Reported
05 Mo	ICP	EA1	PPM	32	1	10000	Results Reported
06 Ni	ICP	EA1	PPM	32	1	20000	Results Reported
07 Co	ICP	EA1	PPM	32	1	20000	Results Reported
08 Cd	ICP	EA1	PPM	32	0.2	2000 0	Results Reported
09 Bi	ICP	EA1	PPM	32	5	2000	Results Reported
10 As	ICP	EA1	PPM	32	5	10000	Results Reported
11 Sb	ICP	EA1	PPM	32	5	2000	Results Reported
12 Fe	ICP	EA1	PCT	32	0 01	10 00	Results Reported
13 Mn	ICP	EA1	PPM	32	1	20000	Results Reported
14 Te	ICP	EA1	PPM	32	10	2000	Results Reported
15 Ba	ICP	EA1	PPM	32	1	2000	Results Reported
16 Cr	ICP	EA1	PPM	32	1	20000	Results Reported
17 V	ICP	EA1	PPM	32	1	20000	Results Reported
18 Sn	ICP	EA1	PPM	32	20	2000	Results Reported
19 W	ICP	EA1	PPM	32	20	2000	Results Reported
20 La	ICP	EA1	PPM	32	1	2000	Results Reported
21 Al	ICP	EA1	PCT	32	0.01	10.00	Results Reported
22 Mg	ICP	EA1	PCT	32	0 01	10 00	Results Reported
23 Ca	ICP	EA1	PCT	32	0.01	10 00	Results Reported
24 Na	ICP	EA1	PCT	32	0.01	10.00	Results Reported
25 K	ICP	EA1	PCT	32	0 01	10.00	Results Reported
26 Sr	ICP	EA1	PPM	32	1	2000	Results Reported
27 Y	ICP	EA1	PPM	32	1	2000	Results Reported
28 Ga	ICP	EA1	PPM	32	2	10000	Results Reported
29 Li	ICP	EA1	PPM	32	1	20000	Results Reported
30 Nb	ICP	EA1	PPM	32	1	10000	Results Reported
31 Sc	ICP	EA1	PPM	32	5	2000	Results Reported
32 Ta	ICP	EA1	PPM	32	10	1000	Results Reported
33 Ti	ICP	EA1	PCT	32	0 010	5 000	Results Reported
34 Zr	ICP	EA1	PPM	32	1	5000	Results Reported
35 S	ICP	EA1	PCT	32	0.01	10.00	Results Reported
36 B	ICP	EA1	PPM	32	2	1000	Results Reported

SAMPLE PREPS
40 SAMPLE TYPE=R ROCK
41 PA2= 32 CRUSH/SPLIT & PULV.
FORMAT (1X,A8,3X,A1,3X,A1,3X,A20,1X,36(1X,A7,2X,A1,1X))

BEGIN	Type	Frac	Sample ID	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr	S	B
15110001	R	2	CG00SLR01	-0.2	1	9	20	-1	6	13	0.6	-5	6	8	5.44	3240	-10	80	25	11	-20	-20	4	0.13	10	10	0.02	0.04	106	32	-2	4	-1	-5	-10	-0.01	-1	0.04	37
15110002	R	2	CG00SLR02	-0.2	29	2	15	3	19	8	-0.2	-5	8	-5	1.99	207	-10	39	163	4	-20	-20	12	0.38	0.22	0.52	0.01	0.14	9	4	-2	6	-1	-5	-10	-0.01	7	-0	22
15110003	R	2	CG00SLR03	-0.2	2	-2	13	1	12	6	-0.2	-5	-5	-5	1.37	204	-10	145	92	4	-20	-20	20	0.53	0.17	0.29	0.02	0.24	9	4	-2	5	-1	-5	-10	-0.01	5	-0	-20
15110004	R	2	CG00SLR04	-0.2	25	111	42	10	4	2	-0.2	-5	-5	-5	0.83	33	-10	66	29	5	-20	-20	36	0.56	0.08	0.03	0.02	0.3	9	8	-2	3	-1	-5	-10	-0.01	6	0.02	-20
15110005	R	2	CG00SLR05	0.3	4	77	54	2	11	4	0.4	-5	56	-5	3.67	249	-10	26	60	16	-20	-20	21	2.69	2.54	0.02	-0	0.12	9	2	6	42	-1	-5	10	-0.01	4	0.02	35
15110006	R	2	CG00SLR06	-0.2	4	15	57	6	12	7	0.3	-5	13	-5	4	177	-10	53	66	17	-20	-20	24	2.38	1.64	-0	0.02	0.22	7	3	7	29	-1	-5	11	-0.01	7	0.03	37
15110007	R	2	CG00SLR07	0.6	38	140	345	2	20	20	1.4	-5	31	-5	5.39	1535	-10	71	51	41	-20	-20	41	1.58	0.43	3.89	0.02	0.36	75	17	5	13	4	6	-10	-0.01	3	0.02	48
15110008	R	2	CG00SLR08	-0.2	19	44	46	-1	6	2	-0.2	-5	5	-5	2.66	96	-10	45	19	7	-20	-20	49	1.42	0.36	0.04	0.01	0.21	15	4	4	12	-1	-5	-10	-0.01	1	0.02	26
15110009	R	2	CG00SLR09	-0.2	13	13	47	-1	6	4	-0.2	-5	8	-5	2.67	170	-10	54	25	8	-20	-20	27	1.52	0.43	-0	0.02	0.25	8	5	4	15	-1	-5	-10	-0.01	1	0.03	27
15110010	R	2	CG00SLR10	-0.2	32	5	73	8	35	12	0.6	-5	18	-5	2.41	486	-10	59	19	5	-20	-20	28	0.9	0.23	0.11	0.01	0.3	12	10	2	8	-1	-5	-10	-0.01	4	0.05	-20
15110011	R	2	CG00SLR11	-0.2	21	10	30	2	4	2	-0.2	-5	25	-5	2.56	132	-10	78	39	8	-20	-20	28	1.09	0.31	0.03	0.03	0.39	12	3	2	8	1	-5	-10	0.02	2	0.06	29
15110012	R	2	CG00SLR12	-0.2	14	40	30	4	4	3	-0.2	-5	-5	-5	1.64	148	-10	70	33	7	-20	-20	24	1.03	0.33	-0	0.02	0.3	8	11	-2	8	2	-5	-10	0.02	4	0.03	21
15110013	R	2	CG00SLR13	-0.2	30	27	61	2	14	11	0.4	-5	11	-5	3.04	209	-10	108	41	10	-20	-20	40	1.52	0.4	0.06	0.02	0.52	15	7	3	12	-1	-5	11	0.03	6	0.04	33
15110014	R	2	CG00SLR14	-0.2	17	5	41	9	11	4	0.2	-5	-5	-5	2.33	116	-10	76	34	7	-20	-20	32	1.14	0.41	0.06	0.01	0.35	10	7	2	12	-1	-5	-10	0.02	7	0.05	27
15110015	R	2	CG00SLR15	-0.2	17	25	54	3	9	5	-0.2	-5	13	-5	3.1	204	-10	73	20	6	-20	-20	37	1.3	0.42	0.03	-0	0.31	5	15	4	10	-1	-5	10	-0.01	3	0.03	31
15110016	R	2	CG00SLR16	-0.2	16	18	37	5	8	3	-0.2	-5	-5	-5	2.32	155	-10	76	31	7	-20	-20	31	1.25	0.41	0.02	0.01	0.33	10	13	2	9	-1	-5	-10	0.02	5	0.03	24
15110017	R	2	CG00SLR17	-0.2	19	16	47	2	9	4	0.2	-5	6	-5	3.13	140	-10	82	26	9	-20	-20	43	1.51	0.45	0.03	0.01	0.42	4	7	3	12	-1	-5	10	0.01	2	0.02	30
15110018	R	2	CG00SLR18	0.6	12	252	78	2	15	4	0.4	-5	43	-5	3.59	223	-10	19	52	20	-20	-20	12	2.9	3.02	0.04	0.03	0.11	18	2	8	45	1	-5	11	-0.01	3	0.18	27
15110019	R	2	CG00SLR19	0.5	7	171	83	3	21	11	0.2	-5	298	-5	2.89	576	-10	39	60	11	-20	-20	17	1.25	0.81	1.22	0.02	0.27	29	8	3	19	-1	-5	-10	0.01	2	0.07	23
15110021	R	2	CG00SLR20	0.3	7	17	35	4	32	17	0.3	-5	35	-5	2.92	212	-10	50	34	5	-20	-20	39	0.63	0.16	0.06	0.02	0.28	19	5	-2	4	-1	-5	-10	-0.01	6	0.04	28
15110022	R	2	CG00SLR21	-0.2	9	21	73	4	30	18	0.5	-5	60	-5	4.42	410	-10	42	66	10	-20	-20	18	1.6	0.98	0.02	0.02	0.24	4	4	4	19	-1	-5	14	-0.01	2	0.3	40
15110023	R	2	CG00SLR22	-0.2	14	19	194	6	21	3	-0.2	-5	183	-5	1.21	80	-10	57	24	4	-20	-20	31	0.5	0.04	0.12	0.02	0.27	8	6	-2	2	-1	-5	-10	-0.01	2	0.03	-20
15110024	R	2	CG00SLR23	-0.2	17	27	82	3	14	10	0.4	-5	32	-5	3.34	824	-10	41	83	10	-20	-20	23	1.28	0.79	0.02	0.02	0.23	3	4	3	15	-1	-5	10	-0.01	2	0.04	38
15110025	R	2	CG00SLR24	0.3	8	7	55	3	21	10	0.3	-5	11	-5	4.72	242	-10	32	34	13	-20	-20	11	1.81	1.31	0.07	0.03	0.16	9	3	5	24	-1	-5	15	-0.01	1	0.45	40
15110026	R	2	CG00SLR25	-0.2	2	17	72	3	13	10	0.5	-5	15	-5	7.02	409	-10	31	66	35	-20	-20	13	3.8	3.33	0.05	0.02	0.14	8	3	12	54	2	-5	-10	-0.01	1	0.37	59
15110027	R	2	CG00SLR26	-0.2	3	4	56	1	16	2	-0.2	-5	15	-5	3.11	149	-10	32	34	11	-20	-20	17	1.92	1.37	0.11	-0	0.14	13	3	5	24	-1	-5	-10	-0.01	2	0.02	31
15110028	R	2	CG00SLR27	-0.2	8	2	34	2	12	5	0.6	-5	137	-5	3.46	153	-10	32	65	7	-20	-20	12	1.13	0.63	0.04	-0	0.15	3	2	3	15	-1	-5	10	-0.01	4	-0	30
15110029	R	2	CG00SLR28	5.2	1	1914	132	-1	18	7	0.4	11	6	-5	3.67	692	-10	51	33	6	-20	-20	24	2.05	1.45	0.72	0.02	0.25	17	8	6	34	-1	-5	12	-0.01	1	0.03	34

END

TITLE 11-08-00 09.38.05 V00-01510 0 T TERMUENDE 08/08/00
CLIENT TOKLAT RESOURCES INC
PROJECT N FINDLAY #SAMPLES 118
SPECIAL VALUES
IS Insufficient Sample
-9 No Value Recorded
Values above the upper limit are shown as +uplimt
Values below the lower limit are shown as -lolmt (ie not detected)
DETERMINATIONS
ELNAME METHO ECO UNI #SAM LOLMT UPLIMT COMMENTS
01 Ag ICP EA1 PPM 117 0.2 200.0 Results Reported
02 Cu ICP EA1 PPM 117 1 10000 Results Reported
03 Pb ICP EA1 PPM 117 2 10000 Results Reported
04 Zn ICP EA1 PPM 117 1 10000 Results Reported
05 Mo ICP EA1 PPM 117 1 10000 Results Reported
06 Ni ICP EA1 PPM 117 1 20000 Results Reported
07 Co ICP EA1 PPM 117 1 20000 Results Reported
08 Cd ICP EA1 PPM 117 0.2 2000.0 Results Reported
09 Bi ICP EA1 PPM 117 5 2000 Results Reported
10 As ICP EA1 PPM 117 5 10000 Results Reported
11 Sb ICP EA1 PPM 117 5 2000 Results Reported
12 Fe ICP EA1 PCT 117 0.01 10.00 Results Reported
13 Mn ICP EA1 PPM 117 1 20000 Results Reported
14 Te ICP EA1 PPM 117 10 2000 Results Reported
15 Ba ICP EA1 PPM 117 1 2000 Results Reported
16 Cr ICP EA1 PPM 117 1 20000 Results Reported
17 V ICP EA1 PPM 117 1 20000 Results Reported
18 Sn ICP EA1 PPM 117 20 2000 Results Reported
19 W ICP EA1 PPM 117 20 2000 Results Reported
20 La ICP EA1 PPM 117 1 2000 Results Reported
21 Al ICP EA1 PCT 117 0.01 10.00 Results Reported
22 Mg ICP EA1 PCT 117 0.01 10.00 Results Reported
23 Ca ICP EA1 PCT 117 0.01 10.00 Results Reported
24 Na ICP EA1 PCT 117 0.01 10.00 Results Reported
25 K ICP EA1 PCT 117 0.01 10.00 Results Reported
26 Sr ICP EA1 PPM 117 1 2000 Results Reported
27 Y ICP EA1 PPM 117 1 2000 Results Reported
28 Ga ICP EA1 PPM 117 2 10000 Results Reported
29 Li ICP EA1 PPM 117 1 20000 Results Reported
30 Nb ICP EA1 PPM 117 1 10000 Results Reported
31 Sc ICP EA1 PPM 117 5 2000 Results Reported
32 Ta ICP EA1 PPM 117 10 1000 Results Reported
33 Ti ICP EA1 PCT 117 0.010 5.000 Results Reported
34 Zr ICP EA1 PPM 117 1 5000 Results Reported
35 S ICP EA1 PCT 117 0.01 10.00 Results Reported
36 B ICP EA1 PPM 117 2 1000 Results Reported
SAMPLE PREPS
40 SAMPLE TYPE=S SOIL
41 PA3= 116 DRY, SIEVE -80
****
FORMAT (1X,A8,3X,A1,3X,A1,3X,A20,1X,36(1X,A7,2X,A1,1X))

BEGIN	Type	Frac	Sample ID	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr	S	B
2E+07	S	1	BRSL00D001	-0.2	26	26	81	1	20	16	0.5	-5	42	-5	2.63	878	-10	50	12	18	-20	-20	21	2.07	0.34	0.04	0.01	0.07	6	10	4	13	2	-5	-10	0.05	2	0.05	32
2E+07	S	1	BRSL00D002	-0.2	25	26	88	-1	28	18	0.4	-5	25	-5	3.04	775	-10	26	18	7	-20	-20	31	1	0.39	0.04	-0.01	0.05	5	7	3	11	-1	-5	-10	-0	1	0.01	33
2E+07	S	1	BRSL00D003	-0.2	29	31	69	-1	16	10	-0.2	-5	12	-5	2.9	325	-10	27	10	8	-20	-20	31	1.28	0.4	0.02	-0.01	0.04	6	4	4	12	-1	-5	-10	0.01	-1	0.03	33
2E+07	S	1	BRSL00D004	-0.2	24	29	75	1	22	12	0.2	-5	8	-5	3.04	538	-10	59	35	14	-20	-20	29	1.17	0.49	0.05	-0.01	0.07	7	5	3	12	2	-5	-10	0.02	-1	0.02	33
2E+07	S	1	BRSL00D005	-0.2	54	31	99	-1	44	18	0.2	-5	20	-5	4.44	776	-10	121	91	46	-20	-20	23	2.36	0.99	0.09	-0.01	0.09	11	7	6	20	3	-5	-10	0.05	-1	0.05	41
2E+07	S	1	BRSL00D006	-0.2	19	14	56	-1	16	12	0.2	-5	12	-5	2.34	553	-10	34	8	6	-20	-20	24	0.9	0.31	0.03	-0.01	0.05	2	3	2	6	-1	-5	-10	-0	-1	0.03	24
2E+07	S	1	BRSL00D007	-0.2	24	12	55	2	11	8	-0.2	-5	11	-5	2.42	363	-10	25	9	7	-20	-20	24	1	0.3	0.03	-0.01	0.06	4	3	3	9	-1	-5	-10	-0	-1	0.04	27
2E+07	S	1	BRSL00D008	-0.2	20	30	55	-1	10	6	-0.2	-5	7	-5	2.7	377	-10	31	10	9	-20	-20	21	1.37	0.41	0.02	-0.01	0.05	5	3	3	13	-1	-5	-10	0.02	-1	0.04	27
2E+07	S	1	BRSL00D009	-0.2	35	46	82	1	19	15	0.2	-5	12	-5	3.04	623	-10	58	14	15	-20	-20	17	1.53	0.39	0.03	-0.01	0.07	10	6	4	14	1	-5	-10	0.03	-1	0.05	29
2E+07	S	1	BRSL00D010	-0.2	23	28	73	-1	15	7	0.2	-5	18	-5	2.88	423	-10	62	13	17	-20	-20	27	1.66	0.42	0.06	-0.01	0.06	12	5	4	13	2	-5	-10	0.03	-1	0.02	25

		Sample ID	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr	S	B
2E+07 S	1	BRSL00D011	-0.2	31	39	71	-1	16	13	0.3	-5	21	-5	2.8	550	-10	58	12	19	-20	-20	23	2.17	0.3	0.04	0.01	0.07	8	5	4	13	1	-5	-10	0.05	3	0.04	28
2E+07 S	1	BRSL00D012	-0.2	25	31	89	-1	18	11	0.2	-5	16	-5	2.59	415	-10	60	10	8	-20	-20	30	1.33	0.37	0.1	-0.01	0.11	6	6	4	11	-1	-5	-10	-0	-1	0.01	23
2E+07 S	1	BRSL00D013	-0.2	49	111	128	1	21	11	0.4	-5	74	-5	3.1	572	-10	65	14	15	-20	-20	23	1.63	0.39	0.03	-0.01	0.07	6	5	4	13	-1	-5	-10	0.03	1	0.03	30
2E+07 S	1	BRSL00D014	-0.2	25	64	95	-1	13	8	-0.2	-5	33	-5	2.88	212	-10	48	13	14	-20	-20	28	1.6	0.46	0.02	-0.01	0.06	4	5	4	14	1	-5	-10	0.02	1	0.01	26
2E+07 S	1	BRSL00D015	-0.2	24	34	64	-1	14	5	-0.2	-5	15	-5	3.02	199	-10	42	23	15	-20	-20	33	1.37	0.46	0.04	-0.01	0.06	5	5	3	14	1	-5	-10	0.03	-1	0.01	27
2E+07 S	1	BRSL00D016	-0.2	29	36	78	-1	16	6	-0.2	-5	13	-5	2.78	332	-10	56	11	11	-20	-20	27	1.31	0.34	0.05	-0.01	0.07	7	5	4	13	-1	-5	-10	0.01	-1	0.03	25
2E+07 S	1	BRSL00D017	-0.2	51	40	79	1	20	20	-0.2	-5	16	-5	3.31	521	-10	29	11	9	-20	-20	31	1.21	0.37	0.02	-0.01	0.06	11	13	3	11	2	-5	-10	0.02	-1	0.04	34
2E+07 S	1	BRSL00D018	-0.2	43	69	90	-1	30	20	-0.2	-5	27	-5	2.61	746	-10	48	11	12	-20	-20	31	1.3	0.27	0.04	-0.01	0.07	4	9	3	11	-1	-5	-10	0.02	-1	0.02	26
2E+07 S	1	BRSL00D019	-0.2	55	69	110	1	36	27	0.3	-5	20	-5	3.49	1027	-10	66	15	17	-20	-20	22	2.39	0.39	0.03	-0.01	0.06	12	8	5	19	1	-5	-10	0.03	-1	0.05	31
2E+07 S	1	BRSL00D020	-0.2	26	37	94	-1	27	16	0.3	-5	17	-5	2.83	387	-10	27	13	6	-20	-20	33	1.03	0.36	0.1	-0.01	0.07	15	9	2	9	-1	-5	-10	-0	2	0.02	26
2E+07 S	1	BRSL00D021	-0.2	19	24	56	-1	12	9	0.3	-5	9	-5	2.48	1037	-10	97	12	19	-20	-20	15	2.35	0.31	0.07	0.01	0.06	13	6	5	12	1	-5	-10	0.05	2	0.05	25
2E+07 S	1	BRSL00D022	-0.2	23	16	66	-1	14	8	-0.2	-5	7	-5	2.58	554	-10	49	15	15	-20	-20	16	1.7	0.38	0.04	-0.01	0.07	14	6	4	11	-1	-5	-10	0.03	-1	0.04	27
2E+07 S	1	BRSL00D023	-0.2	20	17	78	-1	24	11	-0.2	-5	10	-5	2.5	577	-10	26	17	7	-20	-20	32	1.26	0.45	0.03	-0.01	0.05	5	15	3	13	1	-5	-10	0.01	-1	0.02	26
2E+07 S	1	BRSL00D024	-0.2	26	29	90	-1	31	15	-0.2	-5	7	-5	2.66	691	-10	27	29	27	-20	-20	31	1.43	0.59	0.1	-0.01	0.04	10	16	3	14	2	-5	-10	0.04	-1	0.02	27
2E+07 S	1	BRSL00D025	-0.2	20	21	58	-1	14	7	-0.2	-5	9	-5	2.2	201	-10	44	12	9	-20	-20	36	1.2	0.29	0.01	-0.01	0.05	6	6	3	10	-1	-5	-10	0.02	-1	0.01	22
2E+07 S	1	BRSL00D026	-0.2	28	27	75	1	20	10	0.3	-5	12	-5	2.72	401	-10	75	8	9	-20	-20	33	1.31	0.24	0.03	-0.01	0.06	11	7	3	9	1	-5	-10	0.01	-1	0.05	27
2E+07 S	1	BRSL00D027	-0.2	23	27	66	-1	16	9	-0.2	-5	7	-5	2.55	326	-10	33	10	9	-20	-20	40	1.15	0.29	0.01	-0.01	0.05	9	6	3	10	-1	-5	-10	0.03	-1	0.02	26
2E+07 S	1	BRSL00D028	-0.2	23	39	69	1	17	9	-0.2	-5	9	-5	2.42	308	-10	21	7	6	-20	-20	38	0.9	0.25	0.05	-0.01	0.05	14	6	2	8	-1	-5	-10	0.01	-1	0.02	25
2E+07 S	1	BRSL00D029	-0.2	29	34	85	1	23	13	0.3	-5	11	-5	2.99	491	-10	33	12	7	-20	-20	27	1.4	0.4	0.06	-0.01	0.08	14	10	4	12	-1	-5	-10	-0	-1	0.03	28
2E+07 S	1	BRSL00D030	-0.2	29	49	61	2	6	5	-0.2	-5	7	-5	3.01	196	-10	17	8	5	-20	-20	29	1.16	0.34	0.14	-0.01	0.07	21	4	3	8	-1	-5	-10	-0	1	0.03	28
2E+07 S	1	BRSL00D031	-0.2	29	55	78	-1	29	19	0.4	-5	15	-5	2.34	1299	-10	28	3	3	-20	-20	48	0.52	0.12	0.11	-0.01	0.05	10	12	-2	6	-1	-5	-10	-0	2	-0.01	23
2E+07 S	1	BRSL00D032	-0.2	19	22	53	-1	13	4	-0.2	-5	7	-5	2.16	139	-10	37	9	12	-20	-20	45	1.14	0.26	0.02	-0.01	0.04	6	5	2	10	-1	-5	-10	0.03	-1	0.02	21
2E+07 S	1	BRSL00D033	-0.2	23	23	60	2	13	8	-0.2	-5	6	-5	2.41	534	-10	45	9	12	-20	-20	19	1.52	0.26	0.03	-0.01	0.07	10	4	3	11	-1	-5	-10	0.03	-1	0.04	26
2E+07 S	1	BRSL00D034	-0.2	20	18	57	-1	13	8	-0.2	-5	9	-5	2.33	657	-10	46	9	12	-20	-20	23	1.67	0.31	0.03	0.01	0.07	8	5	3	10	1	-5	-10	0.03	-1	0.04	25
2E+07 S	1	BRSL00D035	-0.2	16	26	54	-1	12	4	-0.2	-5	10	-5	2.14	319	-10	39	6	13	-20	-20	21	1.28	0.24	0.02	-0.01	0.07	7	3	4	10	1	-5	-10	0.02	-1	0.04	22
2E+07 S	1	BRSL00D036	-0.2	27	62	63	1	17	14	-0.2	-5	-5	-5	2.56	571	-10	40	8	8	-20	-20	26	1.34	0.23	0.04	-0.01	0.06	10	7	3	9	-1	-5	-10	0.02	-1	0.02	26
2E+07 S	1	BRSL00D037	-0.2	20	19	65	-1	15	7	0.4	-5	9	-5	2.41	385	-10	53	12	22	-20	-20	19	1.4	0.33	0.1	-0.01	0.07	11	3	2	11	2	-5	-10	0.06	-1	0.05	27
2E+07 S	1	BRSL00D038	-0.2	33	14	56	-1	14	10	0.2	-5	8	-5	2.5	487	-10	68	14	43	-20	-20	11	2.16	0.38	0.17	0.01	0.08	15	4	4	12	4	-5	-10	0.11	2	0.08	27
2E+07 S	1	BRSL00D039	-0.2	22	23	63	-1	25	14	-0.2	-5	10	-5	2	654	-10	33	8	8	-20	-20	35	1.01	0.25	0.04	-0.01	0.06	4	7	2	6	-1	-5	-10	0.02	-1	0.01	21
2E+07 S	1	BRSL00D040	-0.2	19	9	51	-1	11	6	-0.2	-5	14	-5	2.19	362	-10	46	10	19	-20	-20	17	1.92	0.29	0.05	0.01	0.07	7	5	4	10	2	-5	-10	0.06	2	0.04	25
2E+07 S	1	BRSL00D041	-0.2	44	21	81	-1	22	16	-0.2	-5	10	-5	3.34	727	-10	61	22	43	-20	-20	16	1.52	0.67	0.16	-0.01	0.11	10	6	-2	13	4	-5	-10	0.12	-1	0.04	32
2E+07 S	1	BRSL00D042	-0.2	27	26	68	-1	17	9	0.3	-5	13	-5	2.49	359	-10	56	13	28	-20	-20	23	1.45	0.34	0.12	-0.01	0.07	11	5	2	10	4	-5	-10	0.08	-1	0.04	25
2E+07 S	1	BRSL00D043	-0.2	27	26	76	-1	22	11	-0.2	-5	8	-5	2.33	387	-10	40	9	11	-20	-20	19	1.05	0.32	0.05	-0.01	0.08	7	7	2	8	-1	-5	-10	0.01	-1	0.03	25
2E+07 S	1	BRSL00D044	-0.2	36	12	71	-1	21	10	-0.2	-5	29	-5	3.03	306	-10	38	12	12	-20	-20	32	1.23	0.39	0.08	-0.01	0.08	5	7	3	8	-1	-5	-10	0.02	-1	0.02	31
2E+07 S	1	BRSL00D045	-0.2	24	27	78	-1	16	10	0.3	-5	22	-5	2.41	613	-10	49	10	16	-20	-20	22	1.51	0.31	0.04	-0.01	0.07	6	5	3	10	1	-5	-10	0.03	-1	0.05	24
2E+07 S	1	BRSL00D046	-0.2	23	43	56	2	9	7	-0.2	-5	-5	-5	2.29	257	-10	23	9	6	-20	-20	25	1.05	0.3	-0.01	-0.01	0.06	9	3	3	8	-1	-5	-10	-0	-1	0.04	23
2E+07 S	1	BRSL00D047	-0.2	30	127	242	-1	53	17	0.8	-5	26	-5	2.76	1303	-10	53	10	13	-20	-20	27	1.4	0.35	0.06	-0.01	0.08	11	9	3	13	-1	-5	-10	0.01	-1	0.07	29
2E+07 S	1	BRSL00D048	-0.2	18	17	61	-1	9	7	-0.2	-5	11	-5	2.38	613	-10	62	10	16	-20	-20	21	1.86	0.31	0.03	0.01	0.06	9	4	4	11	1	-5	-10	0.04	-1	0.08	27
2E+07 S	1	BRSL00D049	-0.2	33	30	59	1	9	6	-0.2	-5	6	-5	2.49	436	-10	33	10	11	-20	-20	28	1.39	0.27	0.03	-0.01	0.07	7	3	3	9	-1	-5	-10	0.02	-1	0.04	26
2E+07 S	1	BRSL00D050	-0.2	15	16	63	-1	15	5	-0.2	-5	12	-5	1.62	384	-10	47	5	7	-20	-20	21	1.07	0.16	0.04	-0.01	0.09	5	3	2	7	-1	-5	-10	-0	-1	0.05	20
2E+07 S	1	BRSL00D051	-0.2	28	72	102	-1	33	29	0.4	-5	43	-5	2.88	1561	-10	84	7	14	-20	-20	29	1.5	0.19	0.03	-0.01	0.08	3	8	4	11	-1	-5	-10	0.03	-1	0.03	27
2E+07 S	1	BRSL00D052	-0.2	22	91	63	-1	25	16	0.2	-5	36	-5	2.34	1144	-10	32	3	5	-20	-20	26	0.78	0.1	0.05	-0.01	0.07	8	7	-2	8	-1	-5	-10	-0	-1	0.02	24
2E+07 S	1	BRSL00D053	-0.2	18	32	51	-1	12	8	0.3	-5	8	-5	1.81	1081	-10	75	7	16	-20	-20	17	1.74	0.16	0.05	0.01	0.06	6	4	3	8	1	-5	-10	0.04	2	0.06	-20
2E+07 S	1	BRSL00D054	-0.2	8	16	31	-1	15	7	-0.2	-5	22	-5	1.84	304	-10	20	5	4	-20	-20	38	0.76	0.22	0.03	-0.01	0.06	3	4	2	6	-1	-5	-10	-0	1	-0.01	-20
2E+07 S	1	BRSL00D055	-0.2	59	258	175	1	22	17	0.5	-5	45	7	3.95	1521	-10	45	10	9	-20	-20	30	1	0.13	0.03	-0.01	0.06	6	7	3	9	-1	-5	-10	0.01	-1	0.02	32
2E+07 S	1	BRSL00D056	-0.2	26	66	67	-1	23	18	0.5	-5	39	-5	2.15	824	-10	27	4	4	-20	-20	42	0.74	0.16	0.1	-0.01	0.09	9	6	-2	6	-1	-5	-10	-0	6	-0.01	24
2E+07 S	1	BRSL00D057	-0.2	41	106	118	5	61	29	1.7	-5	226	-5	3.06	2063	-10	27	4	3	-20	-20	39	0.85	0.2	0.14	-0.01	0.07	13	11	-2	7	-1	-5	-10	-0	6	-0.01	27
2E+07 S	1	BRSL00D058	-0.2	25	64	91	-1	20	10	0.4	-5	34	-5	1.98	452	-10	26	6	7	-20	-20	39	0.92	0.26	0.07	-0.01	0.07	6	6	-2	8	-1	-5	-10	0.02	3	-0.01	-20
2E+07 S	1	BRSL00D059	-0.2	39	67	175	2	54	21	0.9	-5	60	-5	2.85	1158	-10	22	4	9	-20	-20	39	0.65	0.14	0.05	-0.01	0.06	12	12	-2	8	-1	-5	-10	0.03	2	0.02	25
2E+07 S	1	BRSL00D060	-0.2	32	98	97	-1	22	13	0.4	-5	35	-5	2.23	909	-10	20	2	2	-20	-20	30	0.68	0.1	0.13	-0.01	0.05	8	8	-2	4	-1	-5	-10	-0	5	-0.01	23
2E+07 S	1	BRSL00D061	-0.2	33	74	81	2	34	13	-0.2	-5	66	-5	2.94	541	-10	41	14	9	-20	-20	30	1.91	1.05	0.09	-0.01	0.05	6	5	5	23	-1	-5	-10	-0	4	0.03	24
2E+07 S	1	BRSL00D062	-0.2	16	31	70	-1	17	13	-0.2	-5	19	-5	3.05	303	-10	23	6	6	-20	-20	59	1.14	0.54	0.06	-0.01	0.06	17	5	3	8	-1	-5	-10	-0	2	0.03	26
2E+07 S	1	BRSL00D063	-0.2	41	20	70	-1	22	11	-0.2	-5	28	-5	2.61	664	-10	20	8	6	-20	-20	34	1.26	0.49	0.14	-0.01	0.05	7	6	3	9	-1	-5	-10	-0	2	0.01	22
2E+07 S	1	BRSL00D064	-0.2	60	46	105	1	19	11	0.3	-5	37	-5	2.49	616	-10	36	11	12	-20	-20	20	1.56	0.54	0.04	-0.01	0.05	9	5	3	12	-1	-5	-10	0.02	-1	0.05	23
2E+07 S	1	BRSL00D065	0.3	15	291	753	3	50	56	5.5	-5	51	-5	5.16	2300	-10	143	4	6	-20	-20	20	0.74	0.11	0.03	-0.01	0.07	13	9	-2	3	-1	-5	-10	-0	4	0.03	37
2E+07 S	1	BRSL00D066	1	71	265	268	1	25	11	-0.2	-5	25	-5	8.25	468	-10	60	19	12	-20	-20	12	2.27	1.34	-0.01	0.01	0.1	13	2	8	27	-1	-5	-10	-0	2	0.11	66
2E+07 S	1	BRSL00D067	-0.2	18	26	84	9	19	14	-0.2	-5	20	-5	7.22	239	-10	33	18	13	-20	-20	19	1.64	0.94	-0.01	0.02	0.06	48	2	8	19	-1	-5	-10	-0	-1	0.2	60
2E+07 S	1	BRSL00D068	1.6	63	554	210	3	14	12	-0.2	7	35	-5	8.97	373	-10	25	20	16	-20	-20	19	2.09	1.29	-0.01	0.01	0.05	18	2	7	23	-1	-5	-10	0.01	-1	0.15	74
2E+07 S	1	BRSL00D069	-0.2	5	15	54	4	9	9	-0.2	-5	67	-5	6.33	221	-10	93	19	12	-20	-20	14	1.96	1.29	-0.01	0.04	0.11	51	1	7	20	-1	-5	-10	-0	2	0.43	51
2E+07 S	1	BRSL00D070	-0.2	10	59	85	5	8	7	-0.2	-5	33	-5	5.41	315	-10	52	22	15	-20	-20	20	2.26	1.74	0.01	0.02	0.07	24	2	7	30	-1	-5	-10	-0	2	0.17	44
2E+07 S	1	BRSL00D071	-0.2	10	60	83	5	7	7	-0.2	-5	33	-5	5.38	314	-10	51	22	14	-20	-20	20	2.25	1.75	0.01	0.02	0.07	24	2	7	29	-1	-5	-10	-0	2	0.17	45
2E+07 S	1	BRSL00D072	-0.2	13	36	77	4	13	7	0.2	-5	91	-5	6.47	394	-10	29	24	20	-20	-20	20	2.25	1.63	0.01	0.01	0.04	20	2	7	28	-1	-5	-10	0.02	-1	0.1	55

			Sample ID	Ag	Cu	Pb	Zn	Mo	Ni	Co	Cd	Bi	As	Sb	Fe	Mn	Te	Ba	Cr	V	Sn	W	La	Al	Mg	Ca	Na	K	Sr	Y	Ga	Li	Nb	Sc	Ta	Ti	Zr	S	B
2E+07	S	1	BRSL00D073	-0.2	63	88	407	2	25	39	2.1	-5	24	-5	4.84	1662	-10	43	11	9	-20	-20	46	1.4	0.47	0.04	-0.01	0.05	6	9	5	15	-1	-5	-10	-0	-1	0.04	41
2E+07	S	1	BRSL00D074	-0.2	42	110	139	-1	43	30	1.2	-5	10	-5	2.64	2879	-10	61	8	5	-20	-20	43	1.1	0.26	0.18	-0.01	0.05	8	14	2	9	-1	-5	-10	-0	2	-0.01	21
2E+07	S	1	BRSL00D075	0.8	51	181	238	2	54	57	0.5	-5	49	-5	5.7	3433	-10	69	15	20	-20	-20	35	1.96	0.63	0.03	-0.01	0.05	9	14	5	22	-1	-5	-10	0.03	1	0.04	51
2E+07	S	1	BRSL00D076	-0.2	75	162	265	2	44	40	1.7	-5	193	-5	5.4	4872	-10	68	12	15	-20	-20	30	1.44	0.45	0.14	-0.01	0.07	15	13	3	17	-1	-5	-10	0.02	-1	0.04	48
2E+07	S	1	BRSL00D077	1.9	55	230	131	2	24	22	0.4	14	52	-5	5.63	477	-10	42	13	16	-20	-20	19	1.57	0.53	0.02	0.02	0.07	14	5	5	16	-1	-5	-10	0.02	-1	0.11	49
2E+07	S	1	BRSL00D078	-0.2	39	90	135	-1	25	23	0.3	-5	41	-5	5.82	499	-10	56	11	14	-20	-20	21	1.84	0.51	0.02	0.03	0.06	22	3	4	16	-1	-5	-10	0.01	-1	0.17	51
2E+07	S	1	BRSL00D079	-0.2	13	38	60	-1	14	9	-0.2	-5	-5	-5	2.82	180	-10	30	10	8	-20	-20	21	1.37	0.43	0.02	0.01	0.04	10	2	3	13	-1	-5	-10	-0	-1	0.06	25
2E+07	S	1	BRSL00D080	-0.2	13	26	89	-1	25	21	0.2	-5	14	-5	5.04	328	-10	50	17	16	-20	-20	21	2.37	1.2	0.02	0.02	0.04	38	3	7	28	-1	-5	-10	-0	-1	0.1	42
2E+07	S	1	BRSL00D081	-0.2	35	30	93	2	34	29	0.6	-5	25	-5	3.44	1399	-10	56	11	12	-20	-20	18	1.37	0.53	0.16	-0.01	0.05	15	5	4	16	-1	-5	-10	0.01	-1	0.07	32
2E+07	S	1	BRSL00D082	-0.2	77	50	201	2	117	82	0.8	-5	31	-5	5	4761	-10	74	11	9	-20	-20	33	1.31	0.52	0.1	-0.01	0.05	16	21	3	26	-1	-5	-10	0.01	1	0.03	42
2E+07	$	0	BRSL00D083	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
2E+07	S	1	BRSL00D084	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	IS
2E+07	S	1	BRSL00D085	-0.2	21	115	115	2	19	11	0.2	-5	32	-5	3.49	187	-10	69	6	7	-20	-20	40	1.39	0.17	0.05	-0.01	0.12	14	6	3	6	-1	-5	-10	-0	2	0.02	27
2E+07	S	1	BRSL00D086	-0.2	12	25	43	2	9	5	-0.2	-5	11	-5	1.45	202	-10	16	3	3	-20	-20	26	0.63	0.23	0.01	-0.01	0.04	1	4	-2	6	-1	-5	-10	-0	-1	0.02	-20
2E+07	S	1	BRSL00D087	-0.2	23	41	68	2	14	12	0.3	-5	20	-5	2.37	1200	-10	51	10	22	-20	-20	17	2.17	0.24	0.04	0.01	0.09	7	4	5	11	2	-5	-10	0.06	1	0.05	25
2E+07	S	1	BRSL00D088	0.4	12	14	28	-1	5	7	-0.2	-5	-5	-5	1.34	950	-10	38	5	20	-20	-20	6	2.62	0.09	0.05	0.02	0.04	6	3	4	7	2	-5	-10	0.1	9	0.05	20
2E+07	S	1	BRSL00D089	0.5	12	12	24	-1	7	6	-0.2	-5	6	-5	1.55	469	-10	39	8	22	-20	-20	6	3.14	0.11	0.07	0.03	0.04	9	3	4	8	2	-5	-10	0.11	13	0.06	24
2E+07	S	1	BRSL00D090	-0.2	19	140	77	2	16	4	0.2	-5	33	-5	2.31	176	-10	50	15	11	-20	-20	33	1.4	0.19	0.03	-0.01	0.08	4	3	4	10	-1	-5	-10	0.01	-1	0.03	21
2E+07	S	1	BRSL00D091	-0.2	28	95	81	2	19	9	0.2	-5	42	-5	2.59	288	-10	23	7	7	-20	-20	50	0.89	0.27	0.01	-0.01	0.07	4	5	2	8	-1	-5	-10	0.02	1	0.01	31
2E+07	S	1	BRSL00D092	-0.2	49	93	121	9	20	9	0.3	-5	32	-5	4.18	343	-10	47	13	9	-20	-20	31	1.61	0.68	0.03	-0.01	0.1	7	4	5	15	-1	-5	-10	-0	-1	0.03	37
2E+07	S	1	BRSL00D093	-0.2	50	75	96	5	25	14	-0.2	-5	30	-5	3.96	606	-10	39	10	9	-20	-20	37	1.67	0.52	0.01	-0.01	0.08	4	3	4	13	-1	-5	-10	-0	-1	0.01	35
2E+07	S	1	BRSL00D094	-0.2	16	23	45	2	9	4	0.2	-5	19	-5	2.16	223	-10	39	8	15	-20	-20	25	1.31	0.3	0.02	-0.01	0.08	4	3	4	9	1	-5	-10	0.02	-1	0.03	20
2E+07	S	1	BRSL00D095	0.4	23	53	58	2	15	4	-0.2	-5	24	-5	2.4	175	-10	38	13	21	-20	-20	21	1.88	0.47	0.02	0.01	0.04	5	2	7	11	2	-5	-10	0.04	4	0.02	22
2E+07	S	1	BRSL00D096	-0.2	76	186	136	4	50	27	0.5	-5	58	-5	4.52	1760	-10	53	15	14	-20	-20	23	2.04	1.01	0.08	-0.01	0.07	9	9	5	18	-1	-5	-10	0.02	1	0.04	43
2E+07	S	1	BRSL00D097	-0.2	108	848	190	4	81	27	0.4	-5	113	-5	5.94	1460	-10	49	22	14	-20	-20	37	2.86	1.93	0.04	-0.01	0.12	6	11	7	34	-1	-5	-10	-0	4	0.01	52
2E+07	S	1	BRSL00D098	-0.2	63	272	118	3	31	15	0.4	-5	68	-5	4.07	803	-10	49	11	14	-20	-20	29	1.87	0.65	0.02	-0.01	0.08	5	7	5	15	-1	-5	-10	-0	3	0.03	36
2E+07	S	1	BRSL00D099	0.3	28	106	50	2	11	4	0.2	-5	29	-5	2.35	158	-10	42	9	18	-20	-20	19	1.78	0.31	0.02	0.01	0.05	4	3	6	11	2	-5	-10	0.02	-1	0.04	21
2E+07	S	1	BRSL00D100	0.4	25	56	53	2	10	5	-0.2	-5	31	-5	2.55	199	-10	35	6	18	-20	-20	21	1.77	0.26	0.02	-0.01	0.05	4	3	5	11	1	-5	-10	0.03	2	0.03	24
2E+07	S	1	BRSL00D101	-0.2	24	45	51	3	9	4	-0.2	-5	25	-5	2.58	170	-10	40	9	13	-20	-20	22	1.54	0.36	0.01	-0.01	0.05	4	3	5	13	-1	-5	-10	0.01	-1	0.03	22
2E+07	S	1	BRSL00D102	-0.2	6	17	26	-1	4	1	-0.2	-5	7	-5	1.07	59	-10	34	7	12	-20	-20	23	1.33	0.2	0.01	-0.01	0.04	2	2	5	9	1	-5	-10	0.01	-1	0.02	-20
2E+07	S	1	BRSL00D103	1.4	13	16	29	1	5	3	-0.2	-5	14	-5	1.66	108	-10	34	7	27	-20	-20	12	2.23	0.14	0.02	0.02	0.03	4	3	6	6	2	-5	-10	0.08	13	0.02	21
2E+07	S	1	BRSL00D104	-0.2	9	14	41	1	6	2	-0.2	-5	16	-5	2.01	90	-10	41	7	17	-20	-20	27	1.34	0.19	0.03	-0.01	0.05	4	2	6	7	1	-5	-10	-0	-1	0.02	-20
2E+07	S	1	BRSL00D105	-0.2	12	20	45	-1	8	3	-0.2	-5	16	-5	2.28	97	-10	49	11	20	-20	-20	22	2.08	0.32	0.02	-0.01	0.05	3	3	5	13	1	-5	-10	0.02	9	0.02	-20
2E+07	S	1	BRSL00D106	-0.2	21	23	88	1	18	8	-0.2	-5	23	-5	3.73	207	-10	36	19	29	-20	-20	24	2.02	0.65	0.02	-0.01	0.08	4	3	8	18	2	-5	-10	-0	3	0.02	34
2E+07	S	1	BRSL00D107	0.3	11	16	28	-1	5	4	-0.2	-5	9	-5	2.06	72	-10	30	7	27	-20	-20	6	3.05	0.1	0.03	0.02	0.03	5	3	6	8	2	-5	-10	0.11	42	0.03	25
2E+07	S	1	BRSL00D108	-0.2	13	22	61	2	10	5	-0.2	-5	26	-5	3.16	185	-10	46	11	30	-20	-20	22	1.97	0.46	0.02	-0.01	0.05	4	2	7	15	2	-5	-10	0.03	5	0.02	28
2E+07	S	1	BRSL00D109	0.5	10	16	33	1	5	3	-0.2	-5	19	-5	1.87	98	-10	51	8	26	-20	-20	20	1.85	0.21	0.02	0.01	0.04	4	3	6	9	2	-5	-10	0.05	5	0.02	-20
2E+07	S	1	BRSL00D110	-0.2	12	22	41	1	7	3	-0.2	-5	25	-5	2.45	102	-10	33	8	23	-20	-20	27	1.45	0.29	-0.01	-0.01	0.04	2	2	6	8	2	-5	-10	0.01	-1	0.01	-20
2E+07	S	1	BRSL00D111	0.4	16	51	67	2	11	6	0.2	-5	39	-5	2.96	1059	-10	52	11	23	-20	-20	20	1.29	0.51	0.02	-0.01	0.06	5	2	6	12	2	-5	-10	0.02	-1	0.03	26
2E+07	S	1	BRSL00D112	0.4	31	51	76	2	13	6	0.2	-5	67	-5	3.32	302	-10	33	10	13	-20	-20	23	1.53	0.47	0.02	-0.01	0.06	4	2	4	16	-1	-5	-10	-0	1	0.02	29
2E+07	S	1	BRSL00D113	-0.2	33	63	109	1	19	14	0.4	-5	97	-5	3.78	1089	-10	42	11	18	-20	-20	22	1.94	0.42	0.02	-0.01	0.07	4	3	6	15	-1	-5	-10	0.01	-1	0.03	33
2E+07	S	1	BRSL00D114	-0.2	45	103	178	2	25	19	0.7	-5	72	-5	4.54	1537	-10	61	9	17	-20	-20	21	1.57	0.38	0.03	-0.01	0.07	6	3	4	14	-1	-5	-10	-0	-1	0.03	40
2E+07	S	1	BRSL00D115	1	48	203	202	4	32	22	0.8	-5	57	-5	4.86	1603	-10	103	23	23	-20	-20	24	1.9	0.57	0.05	-0.01	0.08	7	3	5	19	-1	-5	-10	0.01	-1	0.02	42
2E+07	S	1	BRSL00D116	-0.2	28	142	192	4	30	23	0.6	-5	65	-5	4.94	1857	-10	73	19	34	-20	-20	23	2.25	1.11	0.04	-0.01	0.07	7	3	7	25	1	-5	-10	-0	-1	0.02	44
2E+07	S	1	BRSL00D117	0.8	26	141	215	4	37	23	0.7	-5	85	-5	5.61	986	-10	31	23	23	-20	-20	23	2.57	1.73	0.06	-0.01	0.05	8	3	8	33	-1	-5	-10	-0	-1	0.02	50
2E+07	S	1	BRSL00D118	-0.2	22	143	187	4	28	22	0.9	-5	62	-5	4.89	2241	-10	69	24	22	-20	-20	21	2.24	1.55	0.04	-0.01	0.05	7	3	7	28	-1	-5	-10	-0	-1	0.02	44
2E+07	S	1	CGSL00D01	-0.2	29	111	172	4	22	15	0.8	-5	53	-5	4.34	1633	-10	119	16	24	-20	-20	20	1.59	0.83	0.03	-0.01	0.06	7	3	6	17	-1	-5	-10	0.01	-1	0.03	39

END

APPENDIX IV

Excerpts From Lowe, C. and Brown, D. (1998): Characterization of Mineralization in the Sullivan-North star Corridor and Enhanced Exploration for Other Mineral Deposits in the Purcell Basin, Southeastern British Columbia:Application of High-Resolution Airborne Geophysics;

20. HIGH RESOLUTION GEOPHYSICAL SURVEY OF THE PURCELL BASIN AND SULLIVAN DEPOSIT: IMPLICATIONS FOR BEDROCK GEOLOGY AND MINERAL EXPLORATION

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ABSTRACT

8800 line-kilometres of high-resolution multi-parameter (electromagnetic, magnetic, gamma-ray spectrometry, and VLF) geophysical data were recently acquired in three survey areas in the Purcell Basin, southeastern British Columbia. One of the survey areas encompasses the world-class Sullivan Sedex deposit. The radiometric data provide the first Canadian survey of a Sedex deposit setting, and the electromagnetic data are the first such public-domain data for the region. The surveys were complemented by ground follow-up of selected anomalies and the measurement of physical properties of rocks on outcrops, hand and core specimens. Collectively, these data provide an opportunity to geophysically characterize the lithostratigraphy and Sedex mineralization within the survey areas.

The geophysical data are valuable to geological mapping and interpretation in the survey areas. Using the contrasting radiometric, magnetic and EM responses between the gabbroic Moyie sills and the sedimentary rocks in which they were emplaced, several new sill exposures have been recognized and new sill correlations facilitated. Radiometric and EM responses are particularly sensitive to the nature and content of phyllosilicate minerals, and allow the discrimination of different sedimentary units within the stratigraphic column, even in areas of thin till cover. Magnetic and radiometric data detect subtle variations within Cretaceous granitic intrusions. Faults in the Yahk area are anomalously magnetic, suggesting that fault structures, in addition to those of the Iron Range, were conduits for hydrothermal flow.

Known sulphide mineralization and hydrothermal alteration in the Sullivan - North Star Corridor correlate with enhanced bedrock conductivity, strong finite conductors and positive magnetic anomalies. Sericitic alteration, which is spatially associated with the sulphide mineralization, is imaged in the radiometric data as elevated potassium levels and depleted thorium:potassium ratios relative to unmineralized host rocks. The integrated patterns permit formulation of exploration criteria for undiscovered Sedex occurrences elsewhere in the basin. However, exploration strategies should consider the limitations of the maximum crustal depth to which the different geophysical methods can detect a response: about 30 cm for the radiometric method; about 100 m for the EM method; and up to 20 km for the magnetic method.

INTRODUCTION

In 1995 and 1996 approximately 8800 line-kilometers of electromagnetic, total field magnetic, gamma-ray spectrometric and VLF data were acquired in three survey areas of the Purcell anticlinorium, southeastern British Columbia. The surveys, conducted by Dighem I-Power, were government-funded and specifically designed to cover the Aldridge Formation that hosts the most significant mineral deposits of the area (Fig. 20-1). The northern (Fig. 20-1, Area 2, Findlay Creek) survey area covers about 400 km^2 south of Findlay Creek, and west of Canal Flats. The central (Fig. 20-1, Area 1, St. Mary River) survey area covers approximately 2000 km^2 extending from 6 km east of Kootenay Lake to about 7 km east of the town of Kimberley and includes the Sullivan Mine. The southern (Fig. 20-1, Area 3, Yahk) survey area comprises about 600 km^2 and extends east from Creston to Yahk and south to the U.S. border. The surveys were conducted using an Aerospatiale (AS350B1) helicopter flown at a mean terrain clearance of 60 m (Fig. 20-2). Flight lines, oriented east-west in the St. Mary River and Yahk survey areas and northwest-southeast in the Findlay Creek area, were spaced 400 m apart with control lines approximately 5 km apart.

A number of published reports describe the data, and examine their utility for regional geology and mineral exploration studies (Brown et al., 1997; Lowe et al., 1997, 1998). In this summary paper we present brief explanations of each of the geophysical methods used and comment on their capabilities and limitations. We describe the expected, as well as the observed, geophysical responses of the lithologies and the known mineral occurrences of surveyed areas and we also discuss the geological implications of observed variations. We focus on the Sullivan-North Star Corridor, which includes the Sullivan and the small North Star and Stemwinder Pb-Zn-Ag deposits. Growth faults, chaotic breccia, Moyie sills, manganiferous garnet-rich beds and muscovite and albite-biotite-chlorite alteration are associated with the mineralization in this corridor (Turner et al., 2000a and b). We consider the geophysical responses of each of these features, relying not only on observed correlations among the various parameters, but also on measurements conducted on rock samples.

Lowe, C., Brown, D.A., Best, M.E., and Shives, R.B.K.
2000: High Resolution Geophysical Survey of the Purcell Basin and Sullivan Deposit: Implications for Bedrock Geology and Mineral Exploration; in The Geological Environment of the Sullivan Deposit, British Columbia, (ed.) J.W. Lydon, J.F. Slack, T. Höy, and M.E. Knapp; Geological Association of Canada, Mineral Deposits Division, MDD Special Volume No. 1, p.

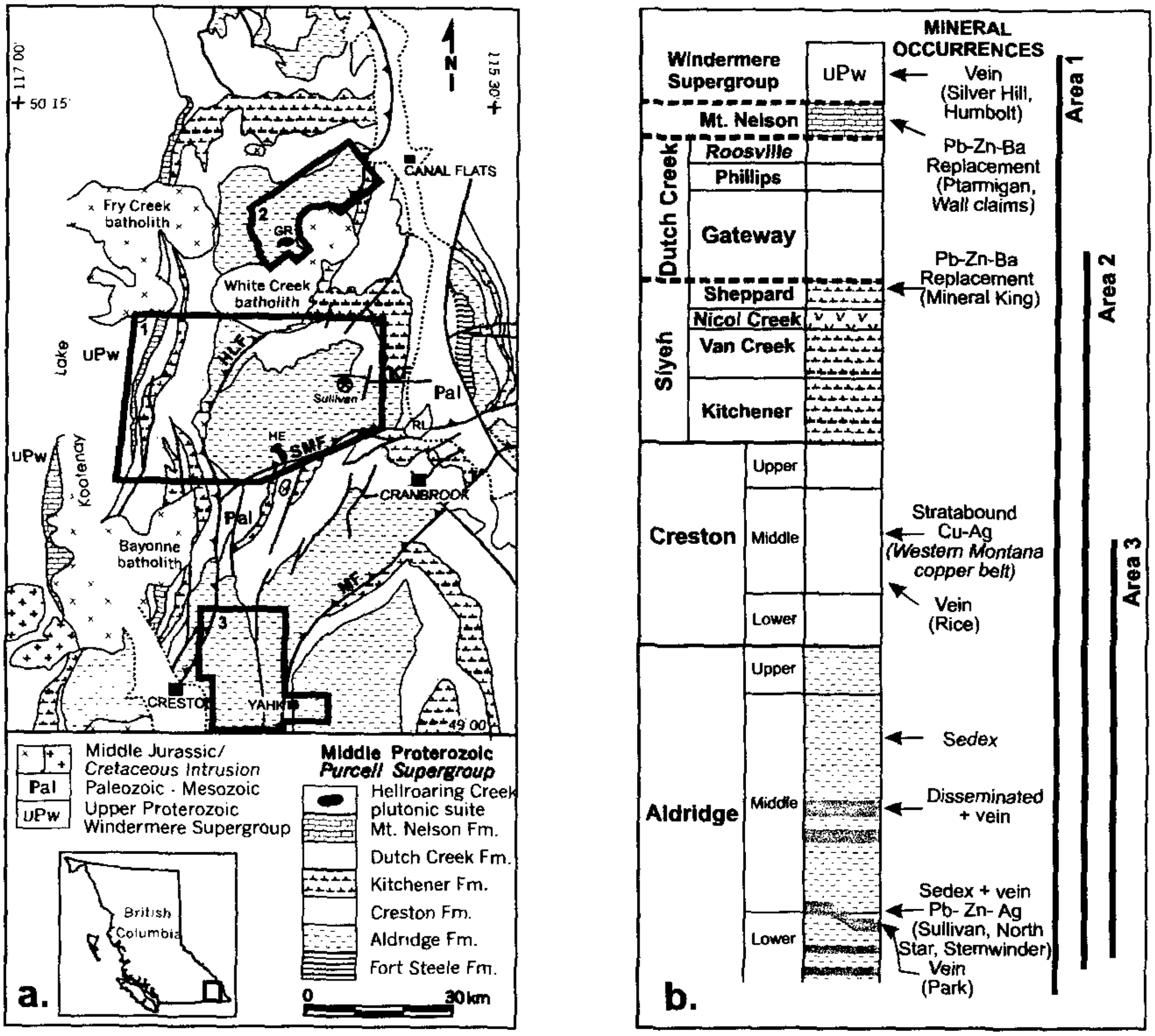

Figure 20-1. (a) Regional geological setting of Purcell Supergroup showing the location of the three geophysical survey areas within the Purcell anticlinorium (modified from Höy et al., 1995). 1 = St. Mary River area; 2 = Findlay Creek area; 3 = Yahk area. GR = Greenland Creek stock, HE = Hellroaring Creek stock, HLF = Hall Lake fault, KF = Kimberley fault, MF = Moyie fault, RL = Reade Lake pluton, SMF = St. Mary fault. (b) Stratigraphic column for the Purcell Supergroup and basal Windermere Supergroup (modified from T. Höy, written comm., 1996). The stratigraphic position of several mineral occurrences are indicated. Thick vertical lines denote the range of stratigraphy exposed in each survey area.

GEOLOGICAL SETTING

Only a brief overview of the geology of the survey areas is given here. More thorough descriptions are provided by Höy et al. (2000) and by Leech (1957); Reesor (1958, 1973); Höy (1984a, b, 1993); and Brown et al. (1995). The three survey areas lie within the Purcell anticlinorium, a broad north-plunging structural culmination cored by middle Proterozoic (circa 1500 to 1350 Ma) metasedimentary rocks of the Purcell Supergroup (Fig. 20-1). The succession is more than 12 km thick and comprises syn-rift, deep water turbidites of the Aldridge Formation, and overlying shallow-water to locally subaerial clastic, carbonate rocks and minor volcanic rocks of the Creston and younger formations which form late- and/or post-rift sedimentary sequences (see Fig. 20-1b). Laterally extensive gabbroic sills ("Moyie sills") intrude the Aldridge sedimentary rocks and provide a minimum age for the syn-rift package (1468 Ma, D.W. Davis, unpub. data) (Anderson and Davis, 1995). Upper Proterozoic conglomeratic, siliciclastic and volcanic rocks of the Windermere Supergroup unconformably overlie Purcell Supergroup rocks.

The Sullivan deposit and several smaller Pb-Zn occurrences of probable sea-floor genesis occur near the contact between the lower and middle members of the Aldridge Formation. The majority of other similar base metal and/or tourmaline occurrences occur near the middle part of the minates at a narrow (< 500 m wide), south-trending magnetic linear that extends from the St. Mary River valley to the Kimberley fault (Fig. C20-4).

Zones of enhanced magnetic anomaly values at the Sullivan mine correspond to the shallowest portions of the mineralized zones adjacent to the Sullivan fault (Fig. C20-7b, 20-8). The magnetic peak at Sullivan is primarily due to the massive pyrrhotite replacement body beneath the western portion of the ore body. Most of this pyrrhotite must only be weakly magnetic, otherwise a stronger anomaly would be expected. Although the eastern portion of the ore body contains minor magnetite (Hamilton et al., 1982) its concentration does not appear to be high enough to affect magnetic amplitudes. The magnetic peak at North Star is situated between the North Star and Stemwinder mines, where abundant disseminated and fracture-filled pyrrhotite occurs. As at the Sullivan Mine, the magnitude of the anomaly suggests that a considerable proportion of the pyrrhotite must be weakly magnetic. North of the Stemwinder Mine lower magnetic amplitudes correspond to the zone of thick Quaternary cover and deep bedrock weathering (*see* Fig. 20-6b).

Elevated radioelement (K, eU, and eTh) concentrations are associated with the Sullivan open pit, collapse zone and waste dumps (Fig. C20-7c, d and 20-8). These anomalies are enhanced by increased bedrock exposure and drainage relative to the surrounding undisturbed, vegetated, moist overburden. Ground spectrometry confirmed the elevated concentrations. Subtle depressed eTh/K ratios are apparent over the eastern and southern waste dumps, but not over the open pit or collapse area. This suggests that the mine waste rock contains more K than does surface bedrock and surficial materials. The area of elevated K, eU and eTh values extends northward from the pit area, across the Kimberley fault and over exposures of the Upper Aldridge Formation on Sullivan Hill. North of the Kimberley fault the radioelement patterns reflect their abundances in the Upper Aldridge argillite and are not related to the mineralization and alteration that characterize the Sullivan-North Star corridor.

Elevated radioelement concentrations and low eTh/K ratios also occur over the North Star deposit. *In situ* spectrometry on bedrock and talus confirms K enrichment relative to unaltered Aldridge turbiditic sediments. The enrichment is a result of sericite alteration within a narrow sub-vertical zone that extends 2 km to the south. These patterns are enhanced by increased bedrock exposures related to old mine workings, cleared ski runs or talus.

Lower amplitude K enrichments with coincident eTh/K depletions occur west and northwest of North Star Hill, in steeply sloping or bowl-shaped areas covered with very thick clay-rich till. Although these anomalies accurately reflect the relatively K-rich chemistry of the till, the corresponding low magnetic anomaly values suggest that the radioelement anomalies do not represent exploration targets like those known within the Sullivan-North Star corridor.

Associated with the mineralization in this corridor are growth faults, chaotic breccia, Moyie sills, manganiferous garnet-rich beds and muscovite and albite-biotite-chlorite alteration (Turner et al., 2000b). The rock property measurements (Table 20-1) show that relative to most Aldridge sedimentary rocks, sedimentary fragmentals have moderately higher K and eU concentrations, those rich in garnet porphyroblasts have higher magnetic susceptibilities and higher eU concentrations and those that exhibit muscovitic and sericitic alteration have elevated K concentrations and relatively lower eTh/K ratios. Although tourmaline-bearing Aldridge rocks appear to have lower magnetic susceptibility values and to be moderately enriched in eU and eTh relative to unaltered Aldridge sedimentary rocks few samples were available for analysis. More extensive chemical analyses of tourmalinites (Jiang et al, 2000a, b; Slack et al., 2000) do not support relative radioelement enrichment in these rocks.

SUMMARY

The new geophysical data described here permit a refinement of geological interpretations and maps within the survey areas. The shallow sampling depths of the gamma-ray spectrometric and EM methods make them particularly suitable for mapping the surface extent of units whose geophysical signatures contrast with adjacent units. Several new exposures of Moyie sills have been identified using the data, and it has proved possible to correlate sills along strike using their characteristic high apparent resistivities (generally > 5000 ohm-m; <0.2 mS/m), low radioelement concentrations and elevated magnetic anomaly values compared to adjacent sedimentary rocks (Table 20-1). Similarly, radioelement data allow the surface extent of the Proterozoic Hellroaring Creek and Greenland Creek stocks to be mapped more accurately. Zones of low apparent conductivity in the St. Mary area accurately outline exposures of the quartzites in the Horsethief Creek Group (unit HH_2 of Reesor, 1996) formations. Extremely low K content and elevated thorium-bearing accessory minerals in unit HH_2 result in high eTh/K ratios.

The new geophysical data for the Sullivan - North Star corridor provide baseline information for mineral exploration elsewhere in the Purcell Basin. Elevated magnetic values, high electrical conductance, and low eTh/K ratios are characteristic of mineralization and sericitic alteration in the corridor, even in the vicinity of the Sullivan deposit where about 90% of the ore has been removed. Outside of the corridor, the Aldridge Formation typically is characterized by low magnetic values, low electrical conductivities, and by relatively few and relatively weak finite bedrock conductors. This suggests that undiscovered magnetic massive sulphide accumulations in the survey areas must be more deeply buried than the near surface portions of either the Sullivan or the North Star deposits. However, it does not preclude the presence of disseminated sulphides at any depth.

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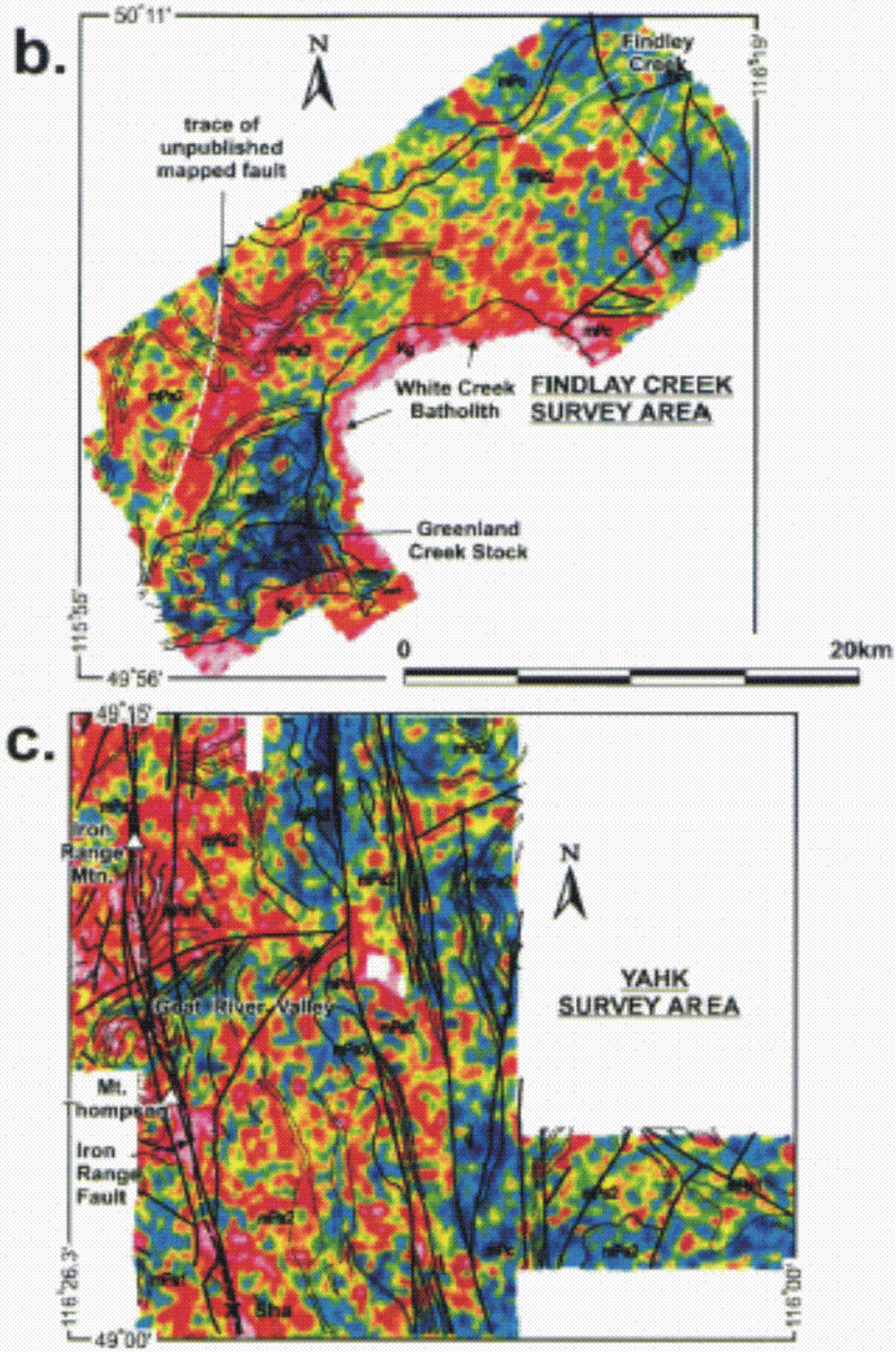
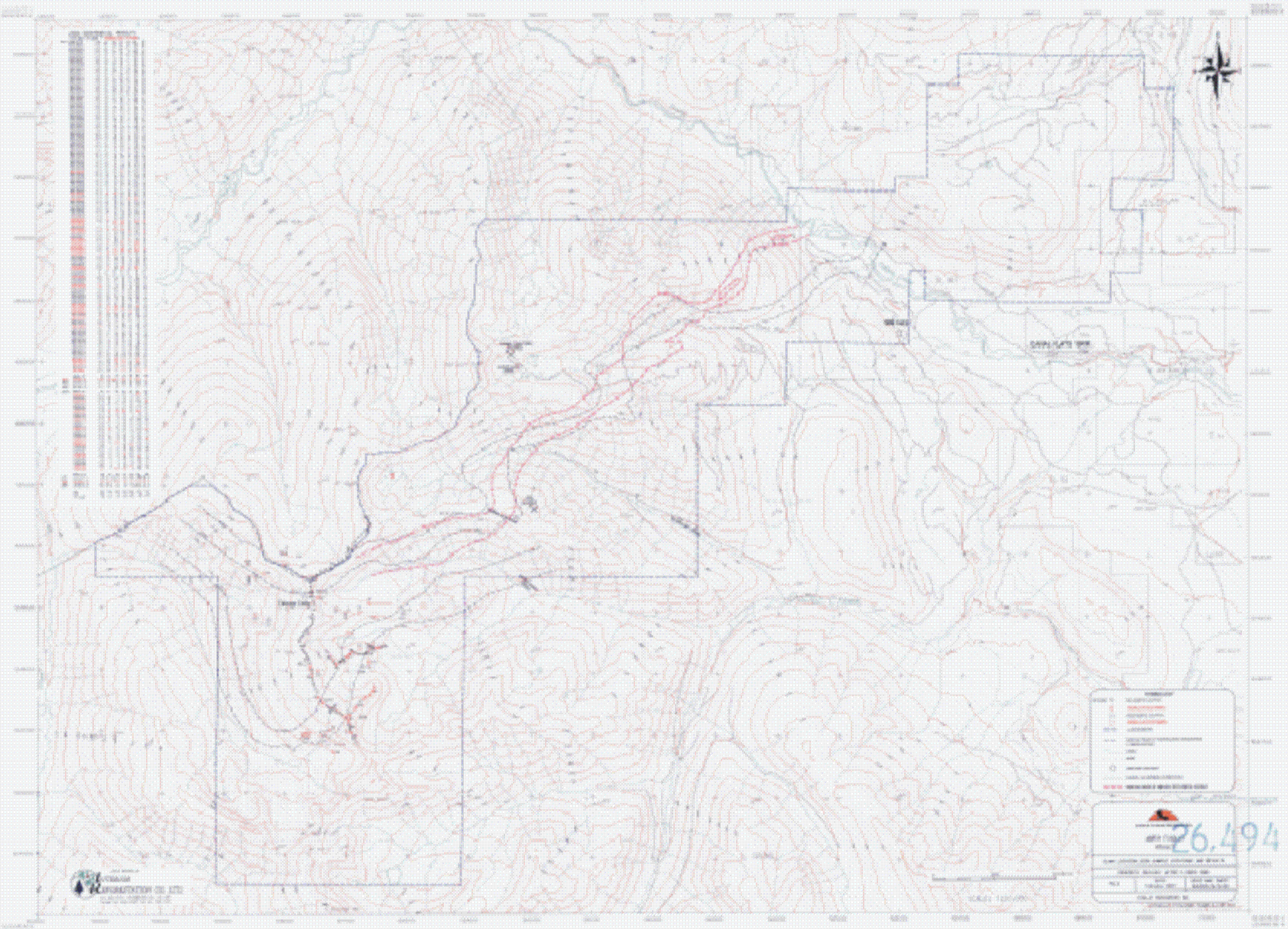


Figure C20-5. eTh/K levels: **a)** St. Mary; **b)** Findlay; **c)** Yahk survey areas. High values are shown in hot colours and low values in cool colours. Geological boundaries from British Columbia Geological Survey Branch Geoscience Map 1995-1. Outcrops of Moyie sills are shown by fine dotted lines. Geological codes are as shown in Figure20-1b.

APPENDIX V

Rock Sample Descriptions

SAMPLNUM	PROJECT	SAMPLER	DATE	SAMPLE TYPE	DESCRIPTION
CG00SLR01	North Findlay	Charlie Greig	7/26/00	grab-chip from outcrop	tourmalinized (?very fine-grained) laminated mudstone; tourmaline needles not commonly
					visible to naked eye or in handlens; interbedded sandstone is rusty-weathering on
					fractures; laminated tourmalinite(?) float displays local limonitic boxwork pockmarks, but
					not noticeably carbonate-bearing
CG00SLR02	North Findlay	Charlie Greig	7/26/00	grab-chip from outcrop	possible laminated tournalinized(?) argillite/mudstone; mainly siltstone and silty mudstone,
					with only local dark (tourmalinized?) mudstone
CG00SLR03	North Findlay	Charlie Greig	7/26/00	grab-chip from outcrop	local laminated tourmalinized(?) argillite/mudstone
CG00SLR04	North Findlay	Charlie Greig	7/26/00	grab-chip from outcrop	local, several metre-thick, crenulated, laminated tourmalinized(?) argillite/mudstone
CG00SLR05	North Findlay	Charlie Greig	7/26/00	grab-chip from outcrop	folded and crenulation cleaved laminated tourmalinized(?) argillite/mudstone
CG00SLR06	North Findlay	Charlie Greig	7/26/00	grab from outcrop	local laminated tourmalinized(?) argillite/mudstone
CG00SLR07	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	*slatey, green-grey mudstone, lacking laminated qz(?)-tourmalinite(?) 'look' of CG00SLR01-06*
CG00SLR08	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	laminated argillite, medium to dark grey or grey-green weathering (as opposed to very
					dark grey or black for CG00SLR01-06)
CG00SLR09	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	muddy, green-grey laminated phyllitic crenulated argillite; darker coloured than
					CG00SLR07-08
CG00SLR10	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	dark grey laminated mudstone
CG00SLR11	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	locally rusty weathering and bleached crenulated and laminated argillite; locally also
					dark grey (tourmalinized?)
CG00SLR12	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	local laminated tourmalinized(?) argillite/mudstone
CG00SLR13	North Findlay	Charlie Greig	7/27/00	grab-chip from outcrop	interlayered dark grey mudstone/siliceous silty mudstone (up to 2-3 metres thick) within
					predominant sandstone
CG00SLR14	*North Findlay*	*Charlie Greig*	*7/27/00*	*grab-chip from outcrop*	*rusty weathering dark grey mudstone*
CG00SLR15	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	laminated, possibly weakly tourmalinized mudstone; local quartz veinlets parallel laminae
CG00SLR16	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	2+ metre thick, somewhat laminated mudstone layer sandwiched between sandstone beds
CG00SLR17	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	laminated tourmalinized(?) dark grey mudstone
CG00SLR18	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	medium grey phyllitic argillite with scattered (1-2%) med-coarse grained limonite boxwork
					(after pyrite?); laminated, and containing local quartz veinlets
CG00SLR19	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	local quartz vein, apparently stratabound, of approx. 1 cm thickness, with about 1-2%
					py+/- galena; includes tourmalinized(?) wallrock (siltstone?)
CG00SLR20	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	laminated and crenulated phyllitic argillite with local boxwork and quartz veining;
					interbedded with predominant albitized sandstone
CG00SLR21	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	laminated mudstone containing quartz veinlets, local pyrite; local mudstone float in vicinity
					contains visible tourmaline needles
CG00SLR22	North Findlay	Charlie Greig	7/28/00	float	siliceous tourmalinite mudstone; visible tourmaline
CG00SLR23	North Findlay	Charlie Greig	7/28/00	grab-chip from 3-4 m thick outcrop	tourmalinized phyllitic and siliceous argillite; visible tourmaline
CG00SLR24	North Findlay	Charlie Greig	7/28/00	grab-chip from outcrop	*resample (of Kennecott #VR30288A) of tourmalinized siliceous argillite; visible tourmaline*
CG00SLR25	North Findlay	Charlie Greig	7/28/00	1.5 m thick grab-chip from outcrop	resistant, rusty weathering tourmalinized siliceous pyritic argillite with scattered
					coarse-grained boxwork; visible tourmaline
CG00SLR26	North Findlay	Charlie Greig	7/29/00	float	tourmalinized mudstone float, with visible tourmaline needles
CG00SLR27	*North Findlay*	*Charlie Greig*	*7/29/00*	*grab from outcrop*	*quartz-tourmaline vein; local massive tourmalinite in float at this place*
CG00SLR28	North Findlay	Charlie Greig	7/29/00	float	probably from large talus block in cirque; veinlet with galena and sphalerite, source
					not located, though search anything but exhaustive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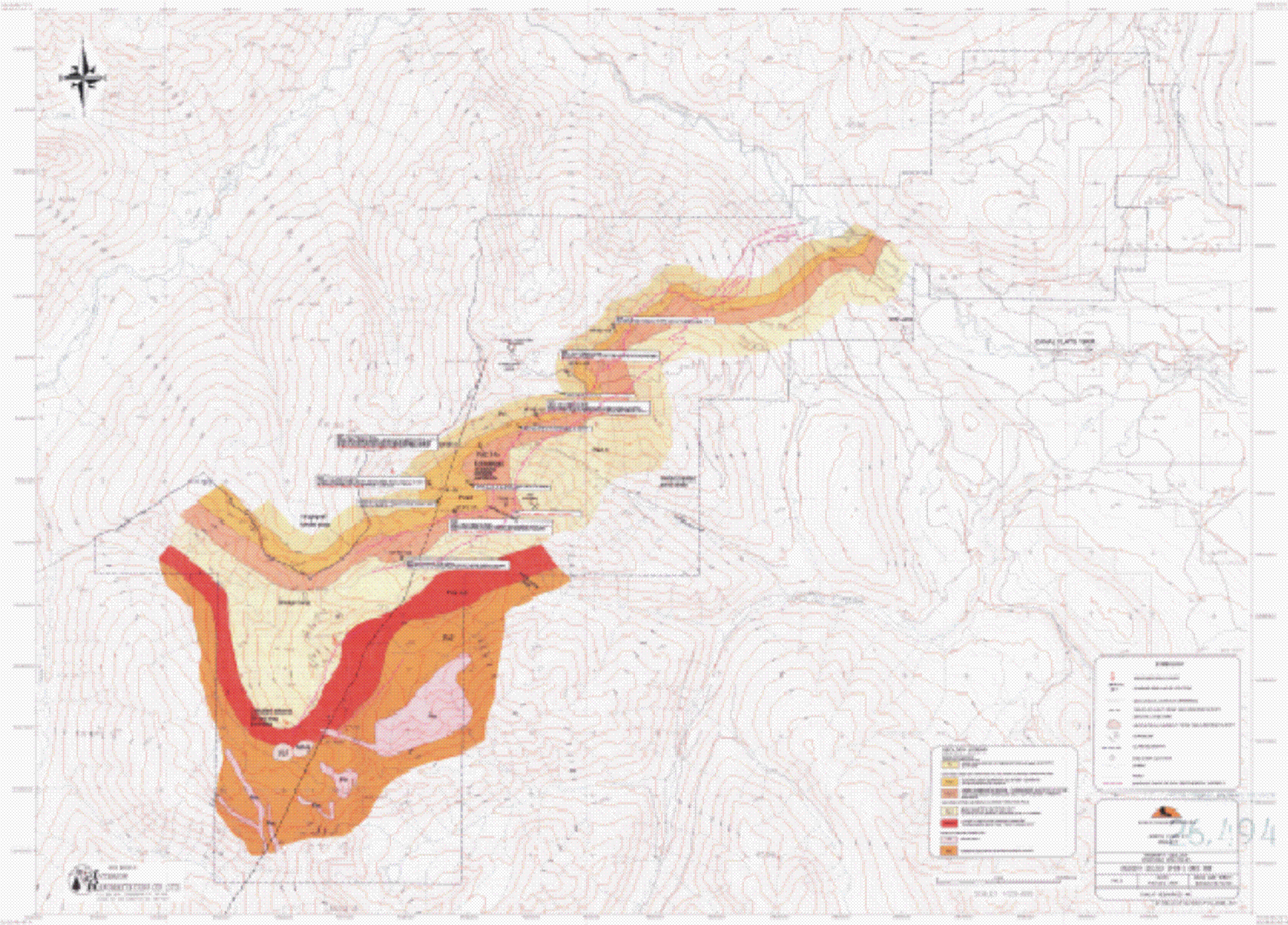
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