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

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TITLE OF REPORT [type of survey(s)] | **TOTAL COST**
Summary Report on the Vidette Lake Property (Geology Geochemistry, G.P.S.) | $ 13,026.83

AUTHOR(S) Jacques Houle, P.Eng. SIGNATURE(S)

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) YEAR OF WORK 2008

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) 4217190

PROPERTY NAME Vidette Lake

CLAIM NAME(S) (on which work was done) 562160

COMMODITIES SOUGHT gold, silver, (copper, tellurium)

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN 092P086, 092P087, 092P124

MINING DIVISION Clinton NTS 092P02W

LATITUDE 51 ° 10 ' 00 " LONGITUDE 124 ° 54 ' 17 " (at centre of work)

OWNER(S)

1) Ellsworth Dickson 2)

MAILING ADDRESS

709 - 700 West Pender Street
Vancouver, B.C. V6C 1G8

OPERATOR(S) [who paid for the work]

1) Ellsworth Dickson 2)

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

Quesnel Trough, Upper Triassic Nicola Group mafic volcanics, Miocene Chilcoten Group basalts, Triassic to Jurassic Thuya granodiorite, structural zone, northwest striking, northeast dipping, chlorite, carbonate, skarn, silica, quartz veins, sinter, low-sulphidation epithermal, pyrite, chalcopyrite, gold, silver, copper, molybdenum, lead, manganese, barium, tellurium

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS 4257, 7164, 8955, 9223, 10103, 10240, 10893, 11273, 11340, 11731, 11854, 12021, 12670, 12946, 12453, 14568, 14569, 15120, 15536, 16286, 17179, 17810, 18492, 18641, 19135, 19136, 21184, 22235, 22728, 23971, 24060. 26024, 28763

(OVER)

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	u/g adit mapping (1:100, 65m, length.)	562160	$ 3,586.11
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock	7 samples analyzed for mult-elements, gold, Te	562160	$ 371.87
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying	7 select grab rock samples taken	562160	incl. in Geology
Petrographic			
Mineralographic	7 samples mineralogically described	562160	incl. in Reports
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)	7 G.P.S. locations taken	562160	incl. in Geology
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other	Summary Technical Report	562160	$ 9,068.85
		TOTAL COST	$ 13,026.83

Summary Report

On the

Videtteе Lake Property

Clinton Mining Division,
British Columbia

NTS 092P02W

UTM NAD83 Zone 10N
5670446 N 646490 E

Latitude 51^0 10’ 00’’ N
Longitude 120^0 54’ 17’’ W

For

Mr. Ellsworth Dickson

By

Jacques Houle, P.Eng.
April 24, 2008

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Summary

The group of three cell mineral claims known as the Vidette Lake Property ("Vidette Lake" or the "Property") represents a core portion of an intermediate stage high grade gold exploration project located 70 kilometres northwest of the city of Kamloops, British Columbia, Canada. Mineral rights to the roughly 500 hectare Property are held 100% by Mr. Ellsworth Dickson. The Property covers one kilometre of strike length of a five kilometre long structural zone which contains nine MINFILE occurrences of quartz-sulphide veins and possible porphyry copper style mineralization. Within the core portion of the structural zone covered by the Vidette Lake Property, one MINFILE occurrence has been developed and partially mined with underground workings, that being the Vidette Mine MINFILE 092P086 which produced 49,980 tonnes @ 18.6 g/t gold, 29.0 g/t silver and 0.088% copper from 1933 to 1940.

The regional geology of the Vidette Lake area consists of mafic volcanic rocks of the Upper Triassic Nicola Group locally exposed in a window eroded through younger, flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcoten Group, co-incident with a northwest trending Miocene channel containing the structural zone and the quartz-sulphide vein deposits within the underlying Nicola rocks. The Nicola rocks are locally intruded by granodiorite plugs possibly related to the Triassic to Jurassic Thuya batholith, and also to the vein and possible porphyry copper mineralization.

The area of the Vidette Lake Property hosts metallic mineralization with characteristics of multiple styles in nine occurrences documented in British Columbia MINFILE with summaries and Mineral Deposit Profiles in Appendix 1 and listed as follows:

- **H05 - Epithermal Au-Ag: low sulphidation** – Gnome (092P024), Hamilton Creek (092P085), Vidette (092P086), Savona Gold (092P087), Epi 2 (092P131), and Clinton (092P146)
- **I01 - Au-quartz Vein** – Hamilton Creek (092P085), Vidette (092P086), Savona Gold (092P087), Shelley (092P088), and Clinton (092P146)
- **I (profile unpublished) - Vein, Breccia and Stockwork** – Clinton (092P146)
- **L04 - Porphyry Cu-Mo-Au** – Gnome (092P024), Vid 27 (092P127)
- **L05 - Porphyry Mo (Climax-type or Low-F)** – Gnome, Vid 4 (092P126)

These occurrences were discovered and at least one partially developed and mined in an era predating modern mineral deposit models and exploration techniques. The area surrounding and including the Property has seen very limited modern, systematic exploration work programs. The recognition of spatial and genetic relationships between epithermal and porphyry deposits has since improved tremendously, as have the techniques to explore, develop and mine them. The potential exists both on the property and in the area to develop viable, new mineral resources of gold, silver, copper and/or molybdenum that could be permitted, mined and processed, for which exploration is fully warranted. A multi-faceted work program totaling $1.3 million is proposed for the Vidette Lake Project to delineate and expand known high grade vein type occurrences in the immediate area of the Vidette past producer and tailings, and to discover new deposits, targeting both high grade vein and bulk mineable porphyry deposits, while establishing environmental and socio-economic programs necessary for long term success.

Introduction and Terms of Reference

The author was retained in January, 2008 by Mr. Ellsworth Dickson to complete the following report on the Vidette Lake Property located near Kamloops, British Columbia. The main purposes of the report are as follows:

- to summarize previous work on the property and surrounding area,
- to make recommendations for further exploration,
- to provide technical assessment work for maintaining the mineral tenures, and
- to help Mr. Dixon market the property for financing exploration and development, and/or negotiating option/joint venture agreements

The report is based primarily on a review of both published and un-published data from the British Columbia Ministry of Energy, Mines and Petroleum Resources and the Geological Survey of Canada. All information used to prepare this report is contained in the References section of the report.

The author is a Qualified Person as defined by National Instrument 43-101, and is independent of Mr. Dickson. The author visited the Vidette Lake Property on April 1, 2008 for the purpose of locating by G.P.S., examining and sampling exposed mineralization, accompanied by Mr. Ellsworth Dickson and Mr. Paul Dickson. During that visit, four surface breakthrough points of the historic underground workings of the Vidette Mine were located by G.P.S., and seven character rock samples were taken of the Tenford Vein and surrounding wall rocks, as described in Appendix 3.

Reliance on Other Experts

Technical information in this report was derived exclusively from government publications, other published reports, and unpublished data provided by government agencies. Original source data has been used where available. Reasonable care and diligence has been taken by the author to verify all historical information. The author has seen no reason to doubt the validity and accuracy of this source data and historical information, most of which was generated by qualified, professional persons at the times the work was done, but prior to the implementation of NI 43-101.

Property Description and Location

The Vidette Lake Property is centred 70 kilometres northwest of the city of Kamloops, and 45 kilometres north of village of Savona, at the north end of Vidette Lake, as shown in Figures 1 and 2a. The mineral rights to the Property are held 100% Mr. Ellsworth Dickson (FMC No. 106726) and consist of 3 cell mineral claims, acquired by Mr. Richard Billlingsley (FMC No. 139085) in July, 2007 and transferred by bill of sale to Mr. Dickson in January, 2008. There appears to be a cluster of eighteen crown granted mineral claims situated beneath or adjacent to the cell claims which constitute the Vidette Lake Property. These historic crown granted mineral claims were issued in 1935, but the under-surface (mineral) rights were all allowed to forfeit to the crown between 1947 and 1992 (see Appendix 2), and therefore do not affect the status of cell claims of the Property. Immediately east of the cell claims of the Vidette Lake Property is a group of ten legacy claims which all post-date the forfeiture dates of the crown granted mineral claims but pre-date the cell claims of the Vidette Lake Property. Therefore, the cell claims are interpreted by the author to be subordinate to the legacy claims, and serve to

reduce the size of the Vidette Lake Property from 587.73 hectares shown in Mineral Titles Online to approximately 500 hectares as shown in Figures 3a, 3b and 4. The three mineral tenures which constitutes the Vidette Lake Property and their status as of the report date appears in Table 1:

Table 1 – Cell Mineral Claims of the Vidette Lake Property

Tenure Number	Tenure Type	Claim Name	Registered Owner (%)	Map Number	Good To Date	Status	Area
562159	Mineral	VIDETTE 1	106726 (100%)	092P	2008/jul/08	GOOD	162.098
562160	Mineral	VIDETTE 2	106726 (100%)	092P	2008/jul/08	GOOD	182.381
562161	Mineral	VIDETTE 3	106726 (100%)	092P	2008/jul/08	GOOD	243.251
Totals	**3 claims**						587.730

The surface rights over most of the Vidette Lake Property are held by the B.C. government as crown land. However, the surface rights for two of the historic crown granted mineral claims (DL 4744 and DL 4762, Lillooet District) totaling 34.74 hectares which have been maintained in good standing since they were issued in 1936, and are held as private property by Vidette Resort Inc. who owns and operates the Vidette Gold Mine Resort based in some of the former mine buildings of the Vidette Lake past producer. These surface rights roughly overlie the historic underground mine workings of the Vidette Lake past producer, and straddle the eastern boundary of the Property. There is also a portion of a third crown granted mineral claim (DL 4739) which has a recreation reserve covering 3.6 of its 7.32 hectare area that was issued in 1980 to the Ministry of Forest and Range, and also straddles the eastern boundary of the Property. Surface tenure title searches appear in Appendix 2 and summarized in Table 2:

Table 2 – Surface Tenures over the Vidette Lake Property

PIN #	DL #	ID #	File #	Document#	Interest	Date	Location	Status	Area
5984630	4739 in part	194135	3400031	80343	Reserve	06-Aug-1980	Vidette Lake	Active	3.6
5985120	4744	45466	0000000	6631/637	Crown Grant	01-Jan-1936	Unknown	Active	18.13
5986160	4762	45478	0000000	6633/637	Crown Grant	01-Jan-1936	Unknown	Active	16.61
TOTALS		**3**	**Tenures**						**38.34**

Similar to elsewhere in British Columbia, no permit is required for non-mechanized exploration, but a valid permit is required to undertake any mechanized work on the Nahmint Property. Such permits are issued by the Inspector of Mines at the Kamloops-based South Central Regional Office, Health and Safety Branch, Mining and Minerals Division, B.C. Ministry of Energy Mines and Petroleum Resources. This requires the submission of a Notice of Work and Reclamation Program Application, which takes approximately one month to process, but commonly takes longer due to delays in receiving referral responses from local First Nations Bands. In addition, owners of the surface rights of the private land covering a portion of the Property must be notified in advance of any mining activity on their land, and fairly compensated for any and all damages inflicted to the surface rights, by the mineral tenure owner.

Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Vidette Lake Property is located about 70 kilometres northwest of Kamloops and 45 kilometres north of Savona, British Columbia. Access to the property is by an all-weather gravel road along the Deadman River valley which starts at the Trans-Canada Highway No.1 seven kilometres west of Savona, or 25 kilometres east of Cache Creek. The local infrastructure is good with extensive logging roads over most of the Property, and the surrounding area. Basic short term accommodations are available at the Vidette Gold Mine Resort located on the property, as well as in Savona located 45 kilometres to the south and in Cache Creek located 60 kilometres to the southwest. Kamloops is a thriving community of 80,000 people and is the principal mine service hub of central British Columbia. Skilled exploration and mining personnel, equipment and services are available in Kamloops and the surrounding area.

The property straddles the locally northwest-southeast trending, steeply incised valley containing Deadman River, Vidette Lake and Hamilton Creek, surrounded by the flat lying Bonaparte-Tranquille Plateau. Elevations range across the property from about 900 metres at Vidette Lake to about 1100 metres on the plateau. The valley scarps are steep to precipitous and covered by grasses and mixed coniferous forests, with the southwest side of the valley generally steeper and more difficult to traverse. The plateau is mainly flat, open and park-like, easily traversed by foot or with vehicles, and covered by a thick 10 to 15 metre thick mantle of glacial and fluvio-glacial material. Abundant fresh water sources occur throughout the year in the valley, available through appropriate permits for exploration or mining purposes. The Property is situated within the designated Pine Beatle Infestation Zone, subject to the enhanced 30% British Columbia Mineral Exploration Tax Credit.

The climate in the area is moderate, with warm summers (10-20^{0}C), cool winters (-10-0^{0}C), and relatively dry throughout the year averaging about 300 millimetres of annual precipitation, mainly as rain. Minor snowfall accumulations at higher elevations linger along north-facing slopes well into the spring. Exploration is possible year round over most of the Vidette Lake Property.

History

The area of the Vidette Lake Property has an extensive history of exploration and minor mineral production summarized from B.C. Annual Reports of the Minister of Mines, Bulletins and Exploration Reviews, and in industry Assessment Reports for which locations and ARIS report numbers appear in the property infrastructure Map Figure 3b, with details summarized as follows:

In 1931, D.B. Sterrett discovered a series of narrow gold-bearing quartz veins around Vidette Lake, and completed access road construction and several open cuts, and began sinking an inclined shaft and installing a treatment plant on the north side of Vidette Lake documented in B.C. Bulletin 1 – Lode Gold Deposits of British Columbia. This was subsequently to be known as the **Vidette Mine (MINFILE 092P086)**.

In 1932, Vidette Mines Ltd. was formed, optioned the Vidette Mine property from Mr. Sterrett, and continued developing underground workings including shaft sinking, drifting on two veins (Tenford and Broken Ridge) on two levels, crosscutting, and completed construction of a nominal 20 tonne per day plant, documented in the B.C. Minister of Mines Annual Report for 1932.

In 1933, Vidette Mines Ltd. continued underground development including shaft sinking, winze sinking, drifting on three veins (Tenford, Broken Ridge and Bluff) on three levels, crosscuts, raises, increasing mill capacity to about 40 tonnes per day, and test milling of 596 tonnes of ore yielding average grades of 17 grams per tonne gold, 37 grams per tonne silver and 0.068% copper. On the south side of the lake, two adits were driven on the Dexheimer Vein, possibly an extension of one the veins being developed on the north side of the lake. Extensive surface infrastructure was also completed at the Vidette Mine. Also in 1933, E. Inglis began exploration work on the Last Chance-Sylvanite, later known as **Savona showing (MINFILE 092P087)** located immediately northwest along strike from the Vidette Mine. Other exploration work began in the area as well, documented in the B.C. Minister of Mines Annual Report for 1933.

In 1934, Vidette Mines Ltd. produced and milled 6,547 tonnes of ore yielding average grades of 17 grams per tonne gold, 34 grams per tonne silver and 0.064% copper, and continued development work and diamond drilling, mainly on the Broken Ridge Vein. Also in 1934, Savona Gold Mines Ltd. was formed, acquired the Last Chance-Sylvanite (Savona) property, and completed diamond drilling, and driving additional adits. Also in 1934, Hamilton Creek Gold Mines Ltd. was formed, and began work on the **Hamilton Creek prospect (MINFILE 092P085)** located immediately west of the Vidette Mine and southwest of the Savona Mine, both on surface (trenching, diamond drilling) and underground (adits and crosscuts). Also in 1934, W.C. Shelly completed limited surface trenching and a short underground adit on their Shelly property (BC MINFILE 092P088) located 2 kilometres northeast of Vidette Lake. This work is documented in the B.C. Minister of Mines Annual Report for 1934.

In 1935, underground work continued on the contiguous Vidette, Savona and Hamilton Creek properties, but little was documented on these or other properties. The Vidette Mine produced and milled 6,397 tonnes of ore yielding average grades of 21 grams gold per tonne, 38 grams per tonne silver and 0.077% copper, documented in the B.C. Minister of Mines Annual Report for 1935.

In 1936, work again continued on the contiguous Vidette, Savona and Hamilton Creek properties. Extensive documentation of the Vidette and Savona workings appear in the B.C. Minister of Mines Annual Report for 1936. The Vidette Mine produced and milled 11,205 tonnes of ore yielding average grades of 24 grams per tonne gold, 38 grams per tonne silver and 0.15% copper, plus minor lead.

In 1937, underground work continued at the Vidette property, including drifting, raising, crosscutting, sinking and diamond drilling. The Vidette Mine produced and milled 9,993 tonnes of ore yielding average grades of 17 grams per tonne gold, 26 grams per tonne silver and 0.11% copper, plus minor lead. Minor work was done at the Hamilton Creek Gold Mine, according to the B.C. Minister of Mines Annual Report for 1937.

In 1938, underground work continued at the Vidette property, including drifting, cross-cutting, raising and diamond drilling, discovering the new "70" Vein. The Vidette Mine produced and milled 6107 tonnes of ore yielding average grades of 17 grams per tonne gold, 21 grams per tonne silver and 0.052% copper, plus minor lead. At the Savona property, underground cross-cutting and drifting was also completed early in the year, before the mine was abandoned and the workings allowed to flood, according to the B.C. Minister of Mines Annual Report for 1938.

In 1939, underground work continued at the Vidette property, consisting of drifting, sinking and diamond drilling, including commencement of a cross cut heading south under Vidette Lake to connect with the Dexheimer Vein workings. The Vidette Mine produced and milled 5,917 tonnes of ore yielding average grades of 17 grams per tonne gold, 17 grams per tonne silver and 0.037% copper, according to the B.C. Minister of Mines Annual Report for 1939.

In 1940, the Vidette property was optioned to Mr. N. Evans and Mr. W. Davidson, and salvage mining was completed at the Vidette Mine, producing and milling 2,218 tonnes of ore yielding average grades of 18 grams per tonne gold, 18 grams per tonne silver and 0.046% copper during the first half of the year before the operations were abandoned according to the B.C Minister of Mines Annual Report for 1940. During the period 1933 to 1940, the Vidette Mine produced and milled 49,980 tonnes of ore yielding average grades of 18.6 grams per tonne gold, 28.9 grams per tonne silver, and 0.088% copper, plus minor lead.

During the 31 year period from 1941 to 1971, no exploration or other work is known to have been documented for the Vidette Lake area, and the under-surface rights to all but two of the crown granted mineral claims were forfeited to the crown.

In 1972, Keda Resources Ltd. completed extensive regional soil geochemistry and prospecting programs in the area surrounding Vidette Lake, and discovered a quartz vein which assayed 4.8 grams per tonne gold, 8.9 grams per tonne silver and 0.35% copper, subsequently named the **Shelley showing (MINFILE 092P088)** located about 500 metres east of Vidette Lake, documented in ARIS report 4257 (Dawson, J.M., 1973). Keda also found altered porphyritic intrusive stocks and dikes, propyllitic alteration, widespread disseminated pyrite and minor local chalcopyrite and molybdenum mineralization, suggesting the potential for disseminated porphyry copper type mineralization in the area, and subsequently discovered the **Gnome showing (MINFILE 092P024)** about 1 kilometre east of Vidette Lake. In 1981, Cominco Ltd. completed reconnaissance ground magnetic and induced polarization surveys, targeting porphyry type mineralization on its Gala Property, coinciding with the former

Gnome Property, located immediately northeast of Vidette Lake, documented in ARIS report 9223 (Scott, 1981). This location also appears to coincide with the Shelley showing. In 1983, Chevron Canada Limited completed soil and rock geochemistry and ground magnetics, and found multi-element soil anomalies on the Gnome Property. Chevron discovered the **VID 27 (MINFILE 092P127) showing** documented in ARIS report 12021 (Bruaset, R.U., 1984), probably coinciding with the Gnome showing. In 1986, Noranda Exploration Company optioned the property and completed further soil geochemistry, ground magnetics and an induced polarization survey and drilled a single 312 m. diamond drill hole which yielded only anomalous values as documented in ARIS report 15120 (R. Wilson, 1986). In 1988, Inco Gold Company optioned the Gnome Property, completed geology and soil and rock geochemistry programs and drilled 2 holes totalling 824.2 metres, intersecting barren skarn mineralization and weakly anomalous metal values, documented in ARIS report 18492 (Morin, J.A., 1989). In 1995, Rugnar Bruaset acquired the Gnome Property and optioned it to Queenstake Resources Ltd., who completed a 3 hole, 610 metre diamond drilling program intersecting broad propyllitic alteration locally with anomalous copper, molybdenum, gold and arsenic, documented in ARIS report 23971 (Bruaset, R.U., 1995).

In 1980, Kerr, Dawson and Associates completed a soil geochemistry program on the Vidette Property covering reverted crown granted mineral claims Valley No.1, Valley No.2, New Hope, C.E. Fraction and Argentia No.1 and surrounding area, covering the **Hamilton Creek (MINFILE 092P085)** prospect and the **Savona Gold (MINFILE 092P087)** showing documented in ARIS report 8955 (Gruenwald, W., 1980). In 1981, the same property was acquired and explored by Hawkeye Resources Ltd., who also completed a soil geochemistry program documented in ARIS report 10103 (Reed, A.J., 1982). In early 1983, Hawkeye Resources completed gold re-analyses of pulps from their 1982 soil geochemistry program on the Vidette Property, as documented in ARIS report 11273 (Kermeen, J.S., 1983). In late 1983, Hawkeye completed underground geological mapping and chip sampling of both the Hamilton Creek and Savona workings, and additional surface soil geochemical sampling, documented in ARIS report 12670 (Kermeen, J.S., 1983).

In 1982, Whopper Holdings Ltd. completed geological mapping on six reverted crown granted mineral claims located immediately west of Vidette Lake, covering the former Searcher No. 2, 5, and 6 claims, E.B. Fraction, White Pass and Monarch claims, documented in ARIS report 10240 (Bain, I., 1982). Also in 1982, Lakewood Mining Company Ltd. completed geological, rock and soil geochemical and induced polarization geophysical surveys on their Clinton claims, located immediately south of Whopper's claims and Vidette Lake, documented in ARIS report 10893 (Allen, D.G. & MacQuarrie, D.R., 1983). Lakewood subsequently completed a 4 hole, 468 metre diamond drilling program on the Clinton Claims in 1983, intersecting anomalous copper and gold values in highly altered, brecciated and pyritic mafic volcanics, and discovering the **Clinton showing (MINFILE 092P146)** as documented in ARIS report 11854 (Allen, D.G., 1984). Green Valley Mine Inc. and Menika Mining Ltd. subsequently acquired an interest in the Clinton claims and expanded the property considerably to the southeast. In 1987, a 3 hole, 685.8 metre drilling program was

completed in the area of previous drilling, yielding two narrow quartz vein intersections with anomalous gold values, consisting of 0.6 metres @ 2.9 grams per tonne in hole 87-2 and 0.3 metres 4.4 grams per tonne in hole 87-3, documented in ARIS report 17179 (Morris, R.J., 1988). In 1990 through 1992, Menika Mining Ltd. completed an induced polarization ground geophysical program on the Clinton Claims in three stages, documented in ARIS reports 21184, 22235 and 22728 (La Rue, J.P., 1990, 1991, 1992).

In 1978, J.D. Murphy completed prospecting on the Searcher 2 Fraction reverted crown granted mineral claim, located just south of the old mine workings of the **Vidette past producer (MINFILE 092P086)**, documented in ARIS report 7164 (Murphy, J.D., 1978). In 1982, Consolidated Paymaster Resources Ltd. completed ground geophysics on their Ham No.1 claim, located immediately west of Vidette Lake, documented in ARIS report 11340 (Murphy, J.D., 1983). Consolidated Paymaster subsequently acquired additional contiguous mineral claims, crown grants and reverted crown granted mineral claims covering the Vidette past producer collectively called the Vidette Lake Property, and completed a 3 hole, 1,017 metre surface diamond drilling program testing down-dip of the underground workings of the Vidette Mine in 1983. Altered and pyritic intrusive porphyry bodies and possible hydrothermal breccias were intersected, but the only two significant intercepts achieved consisting of 0.5 metres @ 3.6 g/t gold and 12 g/t silver from a quartz carbonate zone in hole 832, and 0.8 metres @ 7.9 g/t silver and 0.78% copper from another quartz carbonate zone in hole 833. This work is summarized in ARIS report 11731 (Murphy, J.D., 1983). In 1984, the Vidette Lake Property was acquired and expanded to include the Hamilton Creek prospect and the Savona showing by Tugold Resources Inc., who completed geology, soil geochemistry and prospecting, documented in ARIS report 13453A (Murphy, J.D., 1984), and ground magnetic and VLF-EM geophysics, documented in ARIS report 13453B (Moraal, D., 1984). In 1986, Booker Gold Explorations Ltd. acquired the Vidette Lake Property and completed geological and ground magnetic and VLF-EM geophysics, documented in ARIS report 15536 (Christopher, P.A., 1986). In 1988-89, Booker Gold completed a 4 hole, 302 metre surface diamond drilling program along the southwest shore of Vidette Lake, with only anomalous values obtained as documented in ARIS report 18641 (Stephenson, J.P., 1989). The Vidette Lake Property was subsequently allowed to lapse, but a portion covering the Vidette past producer was re-staked in 1995 by W.R. Gilmour on behalf of Discovery Consultants and the Phoenix Syndicate, who completed a heavy mineral stream sediment, soil and rock geochemistry program, documented in ARIS report 24060 (Carpenter, T.H., 1995). In 1999, Discovery and Phoenix completed a soil and rock geochemistry program, documented in ARIS report 26024 (Carpenter, T.H., 1999).

In1984, prospector Michael Dickens completed prospecting and sampling on the southern part of his North Group of claims centred about 2 kilometres north of Vidette Lake and discovered the **Vid 4 showing (MINFILE 092P126),** documented in ARIS report 12946 (Dickens, M., 1984). In 1985, Mr. Dickens completed similar work on the northern part of his North Group, documented in ARIS report 14569 (Dickens, M.,1985-2). Also in 1985, Mr. Dickens completed prospecting on his Falls Group of claims

centred about 2 kilometres east of Vidette Lake and contiguous to the south with his North Group, documented in ARIS report 14568 (Dickens, M.,1985-1). In 1987, Mr. Dickens completed more prospecting on his claims, discovering the **Epi 2 (MINFILE 092P131) showing**, consisting of widespread epithermal mineralization containing highly anomalous values in gold, arsenic, bismuth and mercury. Inco Gold Company subsequently optioned both groups from Mr. Dickens, named them the Epi Property, and in 1988 completed geological and soil geochemistry programs documented in ARIS report 17810 (Morin, J.D., 1988). In 1989, Inco completed diamond drilling programs of 3 holes totalling 1,077 metres on the **Epi 2 showing** and 6 holes totalling 1,140 metres on the **Vid 4 showing**, documented in ARIS reports 19135 (Morin, J.D., 1989), and 19136 (Morin, J.D., 1989), respectively.

In 2006, Quinto Technologies Inc. acquired the Jon Claims, centred about 4 kilometres west of Vidette Lake, and completed an induced polarization ground geophysical survey and 34 metres in 1 diamond drill hole, which failed to penetrate into the Triassic Nicola volcanics and was abandoned in assumed paleo-regolith beneath the Miocene volcanics before reaching its target depth, documented in ARIS report 28763 (Nethery, R.J., 2006).

Geological Setting

Regionally the Vidette Lake area is situated in the south-central portion of the Quesnel Trough, named after the Triassic-Jurassic island arc terrane of Quesnellia. The area is also situated in a direct line between the producing Gibraltar and Mount Polley deposits 150 kilometres to the northwest and the soon-to-be producing Iron Mask area deposits of New Afton and Rainbow 50 kilometres to the southeast. The Quesnel Trough is currently the focus of Geoscience BC's multi-disciplinary and multi-faceted Quest Project, designed to help stimulate exploration in the region by providing new geoscience data and interpretation, specifically in areas of post mineral cover rocks. This is the case of the Vidette Lake area, where more than half the area of prospective basement rocks is hidden by a relatively thin veneer of flat-lying, post-mineral Eocene-Miocene volcanic and sedimentary rocks. Therefore, the understanding of the regional geological setting is at a time of flux as new public geoscience data is released, and ongoing exploration projects generate new discoveries.

The Vidette Lake area is underlain by mafic volcanics of the Upper Triassic Nicola Group exposed in a window eroded through flat lying Miocene sedimentary rocks and plateau basalts of the Chilcoten Group. The uppermost Chilcoten Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. Locally, the Nicola rocks are intruded by porphyritic biotite-hornblende granodiorite plugs and dikes which are probably related to the Triassic to Jurassic Thuya batholith. Nicola Rocks are generally augite andesite commonly altered to chlorite-rich or carbonatized greenstones, however, contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks. Locally, siliceous cap-rocks

are developed near the paleosurface within and overlying the Nicola rocks. These siliceous cap-rocks are vari-coloured and consist of cryptocrystalline massive and banded to vuggy silica, cross-cutting veins, or delicately-layered material interpreted as hot spring sinter.

The surface geology maps of the region and the property appear as Figures 2b and 3c. The basement geology beneath the Chilcoten volcanics can be inferred somewhat by the aeromagnetic maps of the region and the property, which appear as Figures 2c and 3d. The regional gravity map which appears as Figure 2d may also help to infer basement geology. The legends for all report Figures for both the Vidette Lake Region and the Property are taken from B.C. MapPlace, with property geology units including map symbols as follows:

- Miocene - Pleistocene Chilcotin Group basaltic volcanic rocks (MiPlCvb)
- Miocene - Pleistocene Chilcotin Gp. coarse clastic sedimentary rocks (MiPlCsc)
- Eocene Kamloops Group calc-alkaline volcanic rocks (EKaca)
- Eocene Kamloops Group undivided volcanic rocks (EKav)
- Late Triassic – Early Jurassic granodioritic intrusive rocks (LTrJgd)
- Late Triassic – Early Jurassic syenitic – monzonitic rocks (LTrJsy)
- Upper Triassic Nicola Group basaltic volcanic rocks (uTrNvb)
- Devonian – Triassic Harper Ranch mudstone, siltstone, shale (DTRHsf)

Deposit Types

The Late Triassic – Early Jurassic granodioritic intrusives are directly associated with documented calc-alkalic copper-molybdenum-gold porphyry^{C} and related low-F molybdenum porphyry^{m}, skarn^{S}, redbed^{R}, and epithermal^{E}, polymetallic^{P} or quartz^{Q} vein deposits; and the syenitic-monzonitic intrusives are directly associated with many known alkalic copper-gold porphyry^{A} deposits within the central Quesnel Trough, including the Vidette Lake Region, selectively taken from BC MINFILE shown in Table 3 below.

The host rocks for these deposits are mainly the Upper Triassic Nicola Group volcanic rocks, and rarely the Harper Ranch sedimentary rocks. The younger Eocene and Miocene rocks post-date all metallic mineralization in the region and are barren. Since most of these significant deposits contain primarily copper and gold as economic commodities, the regional geochemical survey (RGS) maps for each of these elements appears in Figures 2e and 2f. However, RGS data over the post-mineral Chilcoten rocks may be significantly subdued due to the masking effect of those rocks. All the report figures 2a-f and 3a-d display the location and status of all MINFILE occurrences within the respective map areas, which are clearly focused within “windows” of basement rocks exposed where the Chilcoten rocks have been eroded or otherwise penetrated.

It must be cautioned that the source data for the tonnes and metal grades in Table 3 consist of summations of production, past production (P.P.) and developed prospect (D.P.) data, for which mineral inventory estimates are generally not to the standards and guidelines of National Instrument 43-101 and the Canadian Institute of Mining.

Table 3 – Select Major Metallic Mineral Deposits in Central Quesnel Trough

Quesnel Trough Deposits[Type]	MINFILE Number	MINFILE Class	Million Tonnes	Cu (%)	Mo (%)	Au (g/t)	Ag (g/t)	Fe (%)
Galaxy[A]	092INE007	Dev. Prospect	3.2	0.65		0.34		
Iron Mask[A]	092INE010	D.P. & P.P.	2.5	0.87		0.42	Low	
Big Onion[A]	092INE011	Dev. Prospect	3.3	0.71		0.44		
Ajax West[A]	092INE012	D.P. & P.P.	5.3	0.43		0.32	Low	
Ajax East[A]	092INE013	Past Producer	3.8	0.34		0.23	0.45	
Afton[A]	092INE023	D.P. & P.P.	110.0	0.95		0.72	2.57	
Rainbow[A]	092INE028	Dev. Prospect	14.8	0.53		0.12		
DM[A]	092INE030	Dev. Prospect	10.0	0.38		0.20		
Getty North[C]	092INE038	Dev. Prospect	72.1	0.31				
Getty South[C]	092INE043	Dev. Prospect	36.7	0.49				
Maggie[C]	092INW015	Dev. Prospect	181.4	0.28	0.029			
Bethlehem[C]	092ISE001	Past Producer	92.8	0.43	Low	0.01	1.08	
East Jersey[C]	092ISE002	Dev. Prospect	20.6	0.40				
Iona[C]	092ISE006	Dev. Prospect	6.0	0.40				
Highmont[C]	092ISE013	D.P. & P.P.	120.3	0.23	0.021			
Dot[C]	092ISE023	Dev. Prospect	2.9	0.50				
Craigmont[S]	092ISE035	Past Producer	35.3	1.14		Low	Low	1.26
Porcupine[R]	092ISE054	Dev. Prospect	0.578	1.92				
Wiz[C]	092ISE063	Dev. Prospect	0.294	1.20				
Ide-Am[C]	092ISE088	Dev. Prospect	11.5	0.27	0.005			
JA[C]	092ISE149	Dev. Prospect	260.0	0.43	0.017			
Ann[C]	092ISE152	Dev. Prospect	43.4	0.27				
Rey Lake[C]	092ISE160	Dev. Prospect	46.9	0.17	0.018			
Victor[C]	092ISW005	Dev. Prospect	0.100	1.50				
Alwin[C]	092ISW010	D.P. & P.P.	0.623	2.17		0.51	11.69	
Highland Valley[C]	092ISW012	Producer	1219.6	0.39	0.005	0.01	0.82	
Highmont[C]	092ISW036	Dev. Prospect	0.8	0.15	0.048			
Lornex[C]	092ISW045	Producer	271.6	0.36	0.011	Low	0.99	
Vidette[E/Q]	092P086	D.P. & P.P.	0.059	0.07		19.0	29.6	
Spout Lake[S]	092P120	Dev. Prospect	0.554	1.80		0.17		
Boss Mountain[M]	093A001	D.P. & P.P.	11.427		0.141			
Mount Polley[A]	093A008	Producer	51.109	0.29		0.39	0.19	
Spanish Mtn.[Q]	093A043	Dev. Prospect	0.838			1.95		
Woodjam[A/R]	093A078	Dev. Prospect	2.085	0.05		0.91		
QR[S]	093A121	D.P. & P.P.	1.339			3.92		
Frasergold[Q/C]	093A150	Dev. Prospect	12.000			1.85		
Lloyd-Nordik[A]	093A160	Dev. Prospect	9.69	0.37		0.28		

All of the 37 known significant metallic mineral deposits in the central Quesnel Trough area contain copper, gold, silver and molybdenum. Of these, 30 are primarily porphyry

deposits of different styles (alkalic[A], calc-alkalic[C], or low-F molybdenum[M]) another 3 are skarn[S] deposits, and 1 is a redbed[R] copper deposit. The remaining 3 are primarily gold-bearing quartz vein deposits of which 2 are interpreted as primarily mesothermal type gold-quartz veins[Q], both located in the northeast part of the area. That leaves only the Vidette Mine and several nearby similar but less developed occurrences, ambiguously interpreted as either a low-sulphidation epithermal vein[E] or a gold-quartz vein[Q] deposit. The cluster of occurrences near the Vidette Mine appears unique in the area, but similar deposits are documented in some other porphyry districts, both in B.C. and worldwide. In some districts, complete alteration and mineralization haloes and systems originally emplaced near the paleo-surface are preserved either through burial by post-mineral cap rocks or by multiple, superimposed and telescoped systems. In such districts genetically related epithermal, porphyry and/or skarn deposits may co-exist spatially and can potentially be exploited together.

Descriptions of gold-silver-copper mineralization from the underground workings in the Vidette (MINFILE 092P086) past producer, and nearby Hamilton Creek (MINFILE 092P085) prospect and Savona Gold (MINFILE 092P087) showing are based primarily on historical data compiled in the B.C. Minister of Mines reports from 1931 to 1940. Since most of the work was done on crown granted mineral claims which did not require assessment work, many details of the deposits and excavations are largely unknown. More recently, both the Hamilton Creek and Savona Gold underground workings were mapped and sampled by Hawkeye Resources Ltd. in 1983, documented in ARIS report 12670 (Kermeen, J.S., 1983). To the author's knowledge, the Vidette Mine has never been re-mapped or sampled since its closure in 1940.

In 1972, J.M. Dawson of Kerr, Dawson & Associates Ltd., working on behalf of Keda Resources Ltd. in the Vidette Lake area, recognized the doubly favourable geological setting, documented evidence and first suggested the potential for "the discovery of high grade ore shoots in gold-bearing, quartz veins which are presently obscured by overburden, and the occurrence of low grade, porphyry – type copper or copper-gold mineralization at depth below the currently exposed vein-type mineralization" in ARIS report 4257 (Dawson, J.M., 1973). Subsequent assessment reports on exploration work in the Vidette Lake area document evidence of several and/or multiple, probably genetically-related mineral deposit types in nine MINFILE occurrences as follows:

- **H05 - Epithermal Au-Ag: low sulphidation** – Gnome (092P024), Hamilton Creek (092P085), Vidette (092P086), Savona Gold (092P087), Epi 2 (092P131), and Clinton (092P146)
- **I01 - Au-quartz Vein** – Hamilton Creek (092P085), Vidette (092P086), Savona Gold (092P087), Shelley (092P088), and Clinton (092P146)
- **I (profile unpublished) - Vein, Breccia and Stockwork** – Clinton (092P146)
- **H04 - Porphyry Cu-Mo-Au** – Gnome (092P024), Vid 27 (092P127)
- **H05 - Porphyry Mo (Climax-type or Low-F)** – Gnome, Vid 4 (092P126)

These nine occurrences, all but two of which are only showings, may actually represent fringe portions of larger alteration/mineralization systems/deposits or clusters thereof. More work done on them could result in changes to target deposit types.

Mineralization

The limited examples of in-situ mineralization observed, mapped and sampled at the former Vidette Mine by the author display textural, mineralogical and geochemical characteristics of both low sulphidation Epithermal Au-Ag veins and (mesothermal) Au-Quartz Veins. The veins are locally vuggy with open-space textures typical of epithermal veins as well as weakly banded with local crack and seal textures typical of mesothermal veins. The samples all contain significant calcite (1-10% Ca), indicative of both deposits types but more significantly useful for mitigating potential acid rock drainage from excavated exposures, waste rock piles and mine tailings. The vein samples also contain minor sulphides (0.7-1.2% S) consisting mainly of pyrite (2-8% Fe) and chalcopyrite (55-3600 ppm Cu), also indicative of both deposit types. The vein samples also contain variably elevated indicator element geochemistry values of Mo (1-32 ppm), Pb (6-60 ppm), Mn 200-2000 ppm), Ba (150-650 ppm) and Te (17 ppm). The main economic elements of interest in the vein samples are Au (15 ppb-25 ppm) and Ag (<0.5-30 ppm).

Due to lingering snow cover in the area at the time of the site visit, access was not possible to the other documented mineral occurrences (Savona and Clinton) located on the Vidette Lake Property. Also, access to both the Dexheimer Vein workings on the south shore of Vidette Lake and to the mine tailings reportedly in Vidette Lake was not possible due to uncertain ice conditions on the lake and particularly along the shoreline. It is considered important to observe, map and sample these other occurrences on the property as well as the many other occurrences on adjacent properties prior to assigning one or more definitive exploration models based on the various mineral deposit profiles used by previous workers for future exploration work on the Vidette Lake Property.

Exploration

No exploration work programs have been completed on the Vidette Lake Property by the current owner, Mr. Ellsworth Dickson, other than verification work completed by the author as part of the requirements of this report. Few systematic exploration work programs were completed by any single previous owner/operator of the immediate area now covered by the property since mining operations ceased in 1940 at the Vidette past producer. As summarized in the History section of this report, only four owner/operators undertook and documented systematic, multi-year exploration programs on MINFILE occurrences in the Vidette Lake area as follows:

- **Hamilton Creek & Savona Gold** - 1981-1983 – Hawkeye Resources Ltd. – ARIS reports 10103, 11273, 12670
- **Clinton** - 1982-1983 – Lakewood Mining Co. Ltd. – ARIS reports 10893, 11854
- **Vidette, Hamilton Creek, Savona Gold** - 1982-1984 – Consolidated Paymaster Resources Ltd./Tugold Resources Inc. – ARIS reports 11340, 11731, 13453
- **Gnome, Epi 2, Vid 4** - 1988-1989 – Inco Gold Company – ARIS reports 17810, 18492, 19135, 19136

Drilling

No drilling has been done on the Vidette Lake Property by the current owner, Mr. Ellsworth Dickson. All drilling records from the operational period of the Vidette Mine have been lost and are unavailable (Dawson, J.M., 1973). As summarized in the History section of this report, several owner/operators undertook and documented minor, single-

campaign diamond drilling programs on MINFILE occurrences in the Vidette Lake area as follows:

Gnome (MINFILE 092P024) showing:
- 1986 – Noranda Exploration Co. Ltd. – 1 hole, 312 metres – ARIS report 15120
- 1988 – Inco Gold Company – 2 holes, 824 metres – ARIS report 18492
- 1995 – Queenstake Resources Ltd. – 3 holes, 610 metres – ARIS report 23971

Clinton (MINFILE 092P146) showing:
- 1983 – Lakewood Mining Company Ltd. – 4 holes, 468 metres – ARIS report 11854
- 1987 – Menika Mines Ltd. – 3 holes, 686 metres – ARIS report 17179

Vidette (MINFILE 092P086) past producer:
- 1983 – Consol. Paymaster Res. Ltd. – 3 holes, 1,017 metres – ARIS report 11731

Hamilton Creek (MINFILE 092P085) prospect:
- 1989 – Booker Gold Exploration Ltd. – 4 holes, 302 metres – ARIS report 18641

Epi 2 (MINFILE 092P131) showing:
- 1989 – Inco Gold Company – 3 holes, 1,077 metres – ARIS report 19135

Vid 4 (MINFILE 092P126) showing:
- 1989 – Inco Gold Company – 6 holes, 1,140 metres – ARIS report 19136

Sampling Method and Approach

Cursory geological mapping and rock sampling completed by the author consisted of first re-locating and geo-referencing four surface breakthrough points of the historic underground workings of the Vidette Mine using a hand-held Garmin Etrex Vista G.P.S., tabulated in Appendix 3. Of these four locations, one was deemed suitable and safe for physical entry, geological mapping and sampling (North Adit Portal No.1 Level) and one other exposed suitable mineralization at surface for mapping and sampling (Tenford Vein breakthrough at surface). These two sites are described in detail as follows, with sample locations plotted on a map of the underground workings, geo-referenced with mineral tenure boundaries and other features added by the author (Figure 4), and with cursory geological mapping and sampling of the first location by the author (Figure 5).

- **North Adit No.1 Level - samples 813251 to 813255 inclusive:** The North Adit No.1 Level appears to have been driven northwesterly along a very thin 50^0 NE-dipping quartz vein at 320^0 Azimuth from the mine workings of the Tenford Vein as an exploration drive, escapeway, and/or ventilation tunnel to breakthrough at surface. This is suggested by a lack of a waste dump at the portal of the adit, by an apparent decline in elevation from the portal for about 65 metres to the southeast where the adit is caved beyond a 0.25 metre thick gauge fault oriented at $200^0/75^0$ by apparent stoping above and below the level, and by the absence of the narrow vein within the outer 5 metres of the adit, beyond a fault oriented at $250^0/70^0$. The southwest end of the adit just before the caved zone is excavated along its northeast wall to a width of about 5 metres exposing three very thin, diverging quartz veins. The author took random grab samples from the back of the adit of each of these three veins, and from the intervening wall rock between each vein, starting from the

southwest to the northeast, in samples 813251 to 823255 inclusive. The veins ranged in thickness from 0.05 to 0.1 metres, and appear to represent "horse-tailing" of the Tenford Vein northwest of the mined portion of the vein. The purpose of these samples was to test the mineralogical and geochemical variations between each of the veins and those of the intervening wallrock. Due to the small sample sizes taken (0.6-1kg.), no reference specimens were kept by the author. The adit appears to have been driven along the southwestern vein (813251), which yielded 877 ppb gold over a thickness of 0.1 metres, as tabulated in Appendices 3 and 4. The other two veins yielded lower gold values, and the wallrock samples yielded even lower gold values. The displacements of the veins across each the two faults at either end of the exposed vein portion within the North Adit are unknown by the author, although fault plane lineation measurements were taken where visible, shown in Figure 5.

- **Tenford Vein Breakthrough at Surface - samples 813256 and 813257:** The Tenford Vein appears to have been continuously mined to near surface along a strike length of about 150 metres, and a 5 metre deep breakthrough raise to surface was located above the centre of the excavated portion of the vein, striking 320^0 and dipping 45^0 northeast, with the probable Tenford Vein exposed along the northwest and southeast sides of the raise. The vein exposed in the sides of the raise is a massive, weakly banded quartz-chlorite-calcite-sulphide vein containing blebs, clusters, stockworks and stringers of sulphides within and along the vein selvedges totaling 3-4% of the vein and consisting of mainly pyrite and chalcopyrite with minor bornite and possible molybdenite, tellurides and native gold, along with variable iron oxide and malachite staining. The author took random grab samples, one each from the southeast (813256) and the northeast sides (813257), which should each be considered as reasonable character samples of the Tenford Vein. Each sample weighed about 8 kg., permitting the author to retain reference specimens of each, and also large samples (3-4 kg.) to be analyzed thereby mitigating possible nugget effects in the sampling process. Sample 813256 yielded 12.3 g/t gold, 17.6 g/t silver over 0.25 metre; sample 813257 yielded 25.5 g/t gold, 13.9 g/t silver over 0.3 metre.

Sample Preparation, Analyses and Security

All rock samples were taken and kept secure by the author until shipped, or kept as secure reference specimens by the author. Samples intended for analysis were shipped via Greyhound B.P.X. service from the author's home office base in Nanaimo, B.C. to Acme Analytical Laboratories Ltd.'s ISO 9902 accredited facility in Vancouver, B.C.

Data Verification

The geological observations, selected rock sampling and geochemistry results obtained as of the date of this report serve to verify the existence of the former Vidette Mine workings, the style and orientation of the vein structures historically mined, and the mineralogy and geochemistry of at least one of the veins and some of the wallrocks.

Adjacent Properties

As shown in Figure 3b, the cell mineral claims of the Vidette Lake Property are completely surrounded by other mineral tenures, all in good standing as of the date of this report, as shown in B.C. Mineral Titles Online (M.T.O.).

Immediately to the east of the Vidette Lake Property lies the group of twelve legacy mineral claims totaling 675 hectares held by either Ragnar U. Bruaset (FMC 103541) or the company Ragnar U. Bruaset and Associates Ltd. (FMC 131850). This property covers five MINFILE showings consisting of the **Gnome 092P024, the Shelley 092P088, the Vid 4 092P126, the Vid 27 092P127, and the Epi 2 092P131**, and is underlain by the southeast continuation of the same window of Nicola Group volcanics and northwest-southeast trending fault system that hosts the **Vidette 092P086 and the Savona Gold 092P087** occurrences on the Vidette Lake Property.

Immediately to the north of the Vidette Lake Property lies a large group of 36 cell mineral claims totaling 17,038 hectares held by Amarc Resources Ltd.

Immediately to the south of the Vidette Lake Property lies another large group of cell mineral claims held by the Candorado Operating Company Ltd., who hold many large groups of cell mineral tenures in the region.

Immediately west of the Vidette Lake Property are several small groups or single cell mineral claims held by individuals. This includes a single cell unit held by Dorian Leslie which covers the **Hamilton Creek MINFILE 092P085 prospect**, situated along the same northwest-southeast trending fault system that traverses the Vidette Lake Property.

Mineral Processing and Metallurgical Testing

No mineral processing or metallurgical testing has been completed by the current owner, Mr. Ellsworth Dickson, nor by any single previous owner/operator of the immediate area now covered by the Vidette Lake Property since mining operations ceased in 1940 at the Vidette past producer.

Mineral Resource and Mineral Reserve Estimates

No mineral resource or mineral reserves estimates have been completed by the current owner, Mr. Ellsworth Dickson. In ARIS report 13453 Part 1 written in 1984, J.D. Murphy, P.Eng., completed a methodical technical critique of the historical operations at the Vidette Mine using original mine data presented in his report appendices from which he estimated mineral resources for both in-situ, unbroken portions of known veins within or near the mine workings, and for the mine tailings in Vidette Lake. These estimates are hereby repeated converted to metric units as follows:

- In-situ, unbroken veins in the Vidette Mine 10,160 tonnes @ 19.1 g/t gold
- Mine tailings in Vidette Lake 45,370 tonnes @ 1.9 g/t gold

These mineral resource estimates were made prior to the implementation of NI-43-101 and CIM standards and guidelines, and do not meet them. They are considered as Historic Mineral Resources only, and should not be used for economic studies.

Other Relevant Data and Information

It is possible that the local surface tenure holders, recreation/conservation groups and/or local communities will actively and successfully oppose any possible future mine

development in the area of the Vidette Lake Property, regardless of future exploration results. There appears to be no First Nations reserves or designated traditional territory in the area surrounding the Vidette Lake Property, so it should not be affected by the ongoing treaty process. However, the Skeetchestn Indian Reserve of the Shuswap First Nation is located 25-40 kilometres south of the property, and the band has 484 members of which at least some live on the reserve. The Vidette Lake area lies within the designated Mountain Pine Beetle Infestation Zone, where mineral exploration is currently subject to a B.C. Mineral Exploration Tax Credit premium of 30%, 10% more than the rest of the province. It is assumed under the B.C. government's 2-Zone model that the Vidette Lake property is available for future exploration, development and mining, and that the B.C. Ministry of Energy Mines and Petroleum Resources will act as an effective advocate and permitting authority on behalf of any proponent who follows its laws and regulations required during all stages of any future work on the Vidette Lake Property.

Interpretation and Conclusions

The interpretation of the geological mapping and observations, selected rock sampling and geochemistry results is limited by the amount of work completed by the author. However, the five vein and two wallrock samples taken, geologically mapped, and microscopically described by the author from the former Vidette Mine, and confirmed by geochemistry results, can all be classified according to the B.C. Mineral Deposit Profiles as either Epithermal Au-Ag: low sulphidation, or Au-Quartz Vein, or both. Therefore, any future mineral exploration programs implemented in the Vidette Mine area need to be designed to honour the known characteristics of both deposit types, until such time as sufficient new information can be obtained to negate the validity of one or the other.

These samples should not be assumed as representative of the in-situ grades, but rather as character samples of the mineralized veins and wall rock, referred to by the author as random grab samples. None of the exposures were adequate to allow representative chip sampling over their full widths. Future hand or power trenching and power washing would permit representative sampling of the rock exposures which have been only grab sampled, which combined with trenching, geological mapping and detailed diamond drilling could permit the estimation of mineral resources for at least some of the veins. It may be useful to dewater the underground workings of the former Vidette Mine, but with good G.P.S. control and geo-referencing of mine workings from detailed drawings, it should be possible to initially test for possible extensions of known veins from surface. This would help justify (or not) the more difficult and expensive underground work. The mine tailings allegedly located within Vidette Lake represent an exploration target for possible secondary recovery of gold, silver, copper and tellurium, which could readily be tested from the lake surface, either in winter from the ice or in summer from a boat.

The Vidette Lake Property represents both an intermediate stage project targeting known cluster of high grade, primarily gold-bearing vein structures and their projections, but also and perhaps more importantly an early stage project targeting large, disseminated porphyry-type copper-gold-silver-molybdenum deposits. It is possible that the vein mineralization of the Vidette Mine itself represents part of an epithermal style capping over a possible deeper and fully preserved porphyry system; it may also be possible that the veins are mesothermal and directly related to a major structural deformation zone co-incident with the Deadman River valley and Vidette Lake.

The laterally extensive but shallow post-mineral Chilcoten volcanics have served to hide prospective host rocks and indicators from previous workers using traditional exploration methods in the area surrounding the property. The abundance of various styles of porphyry copper deposits in the Central Quesnel Trough (see Table 3) exposed in windows exposed through the post-mineral cover rocks suggests that more should exist beneath them as well. New exploration techniques used to look beneath the post-mineral rocks are being developed and may generate new discoveries in the area.

The potential exists on the Vidette Lake Property to discover both high grade gold-bearing veins and large disseminated porphyry copper deposits both at depth near the Vidette Mine and in the surrounding area. The adjacent mineral property to the east held by R.U. Bruaset hosts similar potential to the Vidette Lake Property, and could reasonably be explored together with the Vidette Lake Property as a single project. The adjacent mineral properties to the west held by other individuals could also be logically explored in conjunction with the property. Project logistics are excellent, with an extensive logging road network providing access to most of the property and from the nearby full-service city of Kamloops. With currently high metal prices, the property warrants re-evaluation, GIS data compilation, and systematic exploration programs.

Recommendations

A phased, systematic exploration program is warranted on the Vidette Lake Project, using appropriate techniques, to achieve the following two primary exploration objectives, prioritized as follows, in the author's opinion:

1. Discover new economic mineral deposits of any type on the property using industry standard techniques, commencing with detailed, multi-parameter airborne geophysics over the entire property, with follow-up ground work including establishing access as required, geological mapping, geochemical rock sampling, manual and mechanized trenching and exploratory diamond drilling
2. Establish indicated mineral resources in the gold-bearing vein deposits in and around the Vidette past producer by digitally compiling all available data, establishing access as required, and using manual and mechanized trenching, underground dewatering, geological mapping, representative chip sampling, and definition diamond drilling; and Establish indicated mineral resources in the gold-bearing tailings of the Vidette past producer by locating and representatively sampling them using soil probe techniques deployed from the surface of the lake

In addition, the author recommends preliminary studies to be carried out to achieve the following primary environmental objective:

- Establish baseline environmental database using historic and modern data
- Continue environmental monitoring program through the exploration and subsequent phases of the project

Finally, the author recommends the following socio-economic programs be initiated to complement the exploration and environmental objectives:

- Identify, negotiate and establish contract, employment and other co-operation agreements with the First Nations community at the Skeetchestn Indian Reserve
- Negotiate and establish access road use and other co-operation agreements with local surface rights tenure holders
- Negotiate and establish work progress update protocols with local recreation and conservation groups

The following Phase 1 exploration, resource definition, environmental and socio-economic programs and budgets are proposed for Year 1 at the Vidette Lake property:

Table 4 – Proposed Multi-faceted Work Programs and Budgets

Item	Description	Units/Timing	Unit Cost	Item Cost
Property Exploration:				
Airborne Geophysics	Mag./E.M./Radio.	200 line-km/Apr-May	$200/line-km	$ 40,000
Ground Access	Road/trail rehab.	10 days cat/hoe/June	$2,000/day	$ 20,000
Geological Mapping	Project Geologist	1 month/July	$15,000/mo.	$ 15,000
Rock Sampling	Field Assistant	1 month/July	$10,000/mo.	$ 10,000
Trenching	Expose targets	10 days hoe/Aug	$2,000/day	$ 20,000
Diamond Drilling	Test targets	1000 metres/Sept	$150/metre	$ 150,000
Compilation/Reports	Project Geologist	2 months/Nov-Dec	$10,000/mo.	$ 20,000
Sub-total Exploration		**April-December**		**$ 275,000**
U/G Gold Resources:				
Historic Data Collation	Project Geologist	1 month/Jan	$10,000/mo.	$ 10,000
GIS Data Compilation	GIS Technician	2 months/Feb-Mar	$ 7,500/mo.	$ 15,000
Plan Exploration	Project Geologist	2 months/Feb-Mar	$10,000/mo.	$ 20,000
Surface access	Road/trail rehab.	5 days cat/hoe/Apr	$2,000/day	$ 10,000
Install Infrastructure	Camp/Power	5 days/Apr	$5,000/day	$ 25,000
Underground access	Rehab/wash/pump	5 months/May-Sept	$50,000/mo.	$ 250,000
U/G mapping	Project Geologist	1 month/June	$15,000/mo.	$ 15,000
U/G sampling	U/G Assistant	1 month/June	$10,000/mo.	$ 10,000
Diamond Drilling	Define targets	3000 metres/Jul-Sept	$150/metre	$ 450,000
Demob. Infrastructure	Camp/Power	5 days/Oct	$3,000/day	$ 15,000
Compilation/Reports	Project Geologist	3 months/Oct-Dec	$10,000/mo.	$ 30,000
Sub-total U/G Au Res.		**January-December**		**$ 850,000**
Tailings Resources:				
Historic Data Collation	Project Geologist	5 days/Jan	$750/day	$ 3,750
Site Survey	GPS Technician	2 days/Jan/June	$625/day	$ 1,250
Ice/Boat based drilling	Soil Probe Testing	1 month/Feb/Jul	$60,000	$ 60,000
Compilation/Reports	Project Geologist	1 month/Apr/Oct	$10,000/mo.	$ 10,000
Sub-totals Au Tailings		**Jan-Apr/Jun-Oct**		**$ 75,000**
Environmental:				
Baseline Program	Enviro. Consultants	1 month/Apr	$30,000	$ 30,000
Ongoing Monitoring	Local Samplers	8 months/May-Dec	$2,500/mo.	$ 20,000
Sub-total Enviro.		**Apr-Dec**		**$ 50,000**
Socio-Economic:				
First Nations, Surface	Agreements	10 months	$2,500/mo.	$ 25,000
Multi-Interest Groups	Meetings	10 months	$2,500/mo.	$ 25,000
Sub-total Socio-Eco.				**$ 50,000**
TOTALS		**Jan-Dec**		**$1,300,000**

The Phase 1 program could, and probably should be extended over a period of two or more years. Phase 2 and subsequent programs and budgets would follow depending on the success of the Phase 1 programs, with the exploration programs probably escalating annually in both size and budget.

References

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Exploration: http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/cat_expl.htm
Fieldwork: http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/cat_fldwk.htm
Information Circulars: http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/cat_ic.htm
MapPlace: http://www.em.gov.bc.ca/Mining/Geolsurv/MapPlace/
Mineral Deposit Profiles:
http://www.em.gov.bc.ca/Mining/Geolsurv/MetallicMinerals/MineralDepositProfiles/default.htm
Mineral Titles Online: http://www.mtonline.gov.bc.ca/
MINFILE: http://www.em.gov.bc.ca/Mining/Geolsurv/Minfile/
Open Files: http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/cat_of.htm
Papers: http://www.em.gov.bc.ca/Mining/Geolsurv/Publications/catalog/cat_papr.htm
Project Approvals: http://www.em.gov.bc.ca/subwebs/mining/Project_Approvals/default.htm
Two Zone System: http://www.em.gov.bc.ca/Subwebs/mining/Exploration/two_zone_system.htm
First Nations: http://www.gov.bc.ca/arr/firstnation/shuswap_nation_tribal_council/default.html

B.C. Integrated Land Management Bureau Website reference:

Tantalis Gator: http://ilmbwww.gov.bc.ca/irb/gator/index.html

Other references:

B.C. South-Central Regional Geologist's files in Kamloops, B.C.

Date and Signature Page

I, Jacques Houle, P.Eng. Do hereby certify that:

1. I am currently employed as a consulting geologist by:
   Jacques Houle, P.Eng. Mineral Exploration Consulting 6552 Peregrine Road, Nanaimo, British Columbia, Canada V9V 1P8
2. I graduated with a Bachelor's of Applied Science degree in Geological Engineering with specialization in Mineral Exploration from the University of Toronto in 1978.
3. I am a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia, the Society of Economic Geologists, the Association for Mineral Exploration British Columbia, the Geological Association of Canada, and the Vancouver Island Exploration Group; I am also a member of the Technical Advisory Committee for Geoscience B.C.
4. I have worked as a geologist for 29 years since graduating from university, including 5 years as a mine geologist in underground gold and silver mines, 15 years as an exploration manager, 3 years as a government geologist and 4 years as a mineral exploration consultant.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, membership in a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the Technical Report entitled "Summary Report on the Vidette Lake Property". I visited the mineral property during 2008.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the owner applying all the tests in NI 43-101.
10. I have read National Instrument NI 43-101, Companion Policy 43-101.CP and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument, policy and form.

Dated this 24th day of April, 2008.

Signature of Qualified Person

Jacques Houle, P.Eng.
Print name of Qualified Person

Seal of Qualified Person

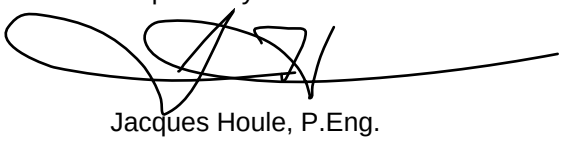
Vidette Lake Summary Report Expenditures					Expenditure Allocation		
Invoice No.	**Item**	**Units**	**Unit Cost**	**Total Cost**	**Report**	**Geol/GPS**	**Geochem**
08.01.06	Report	0.6	600.00	360.00	360.00		
	Office	0.6	60.00	36.00	36.00		
	GST-Houle	0.05	396.00	19.80	19.80		
08.02.05	Report	8.65	600.00	5,190.00	5,190.00		
	Office	8.65	60.00	519.00	519.00		
	GST-Houle	0.05	5,709.00	285.45	285.45		
08.04.01	Site Visit	2.55	600.00	1,530.00		1,530.00	
	Truck	0.9	300.00	270.00		270.00	
	Office	0.2	60.00	12.00		12.00	
	Field	0.6	60.00	36.00		36.00	
	GST-Houle	0.05	1,848.00	92.40		92.40	
	Report	3.8	600.00	2,280.00	2,280.00		
	Office	3.7	60.00	222.00	222.00		
	Truck	0.1	300.00	30.00	30.00		
	GST-Houle	0.05	2,532.00	126.60	126.60		
	Ferrys/Tolls			124.95		124.95	
	Analyses			354.16			354.16
	GST-Acme			17.71			17.71
Dickson	Truck Use	3	100.00	300.00		300.00	
Expenses	Truck Fuel	receipts	319.11	319.11		319.11	
	Hotels,Meals	receipts	901.65	901.65		901.65	
TOTAL				**13,026.83**	**9,068.85**	**3,586.11**	**371.87**

Notes:

1 Travel and site visit to Vidette Lake Property took place March 31 to April 2, 2008

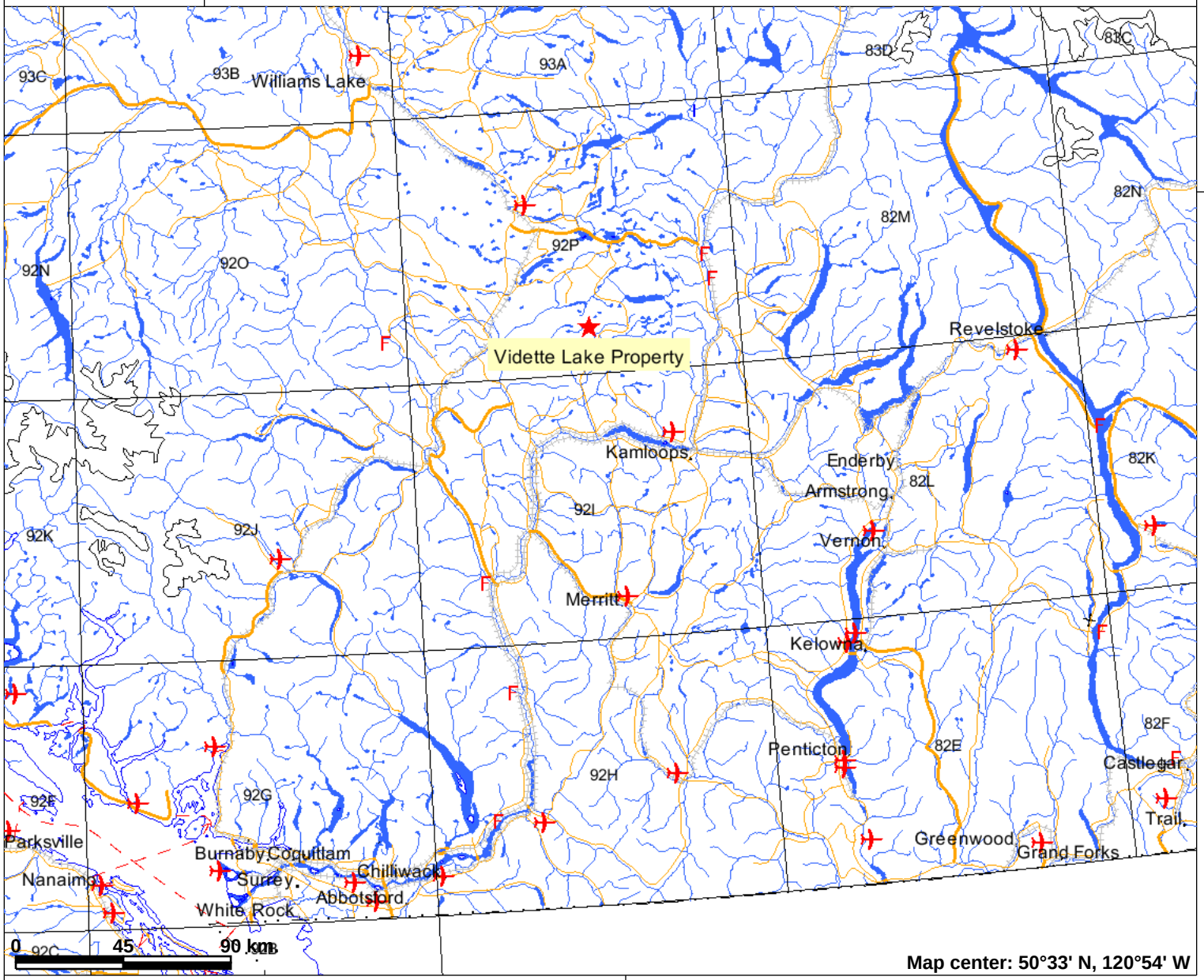
2 Preparation and reporting took place January 24 to April 29, 2008

Prepared by:



Jacques Houle, P.Eng.

Vidette Lake Property Location



Legend

Provincial Boundary (1:2M)

- Boundary (International)
- Boundary (Interprovincial)

NTS Grid

Transportation - Points (1:2M)

- Airstrip
- Ferry Route
- Seaplane Custom Port

Transportation - Lines (1:2M)

- Ferry Route
- Road - Trunk
- Road - Main
- Road - Local
- Bridge
- Rail Line

Water - Points (1:2M)

- Falls
- Dam

Water - Lines (1:2M)

- River/Stream - Definite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Lake - Definite
- Icefield
- Island - Definite
- Coastline - Definite

Water - Polygons (1:2M)

- River/Stream - Definite
- Lake - Definite
- Island - Definite

Major Cities

N

Scale: 1:2,500,000

Figure 1

Vidette Lake Regional Infrastructure

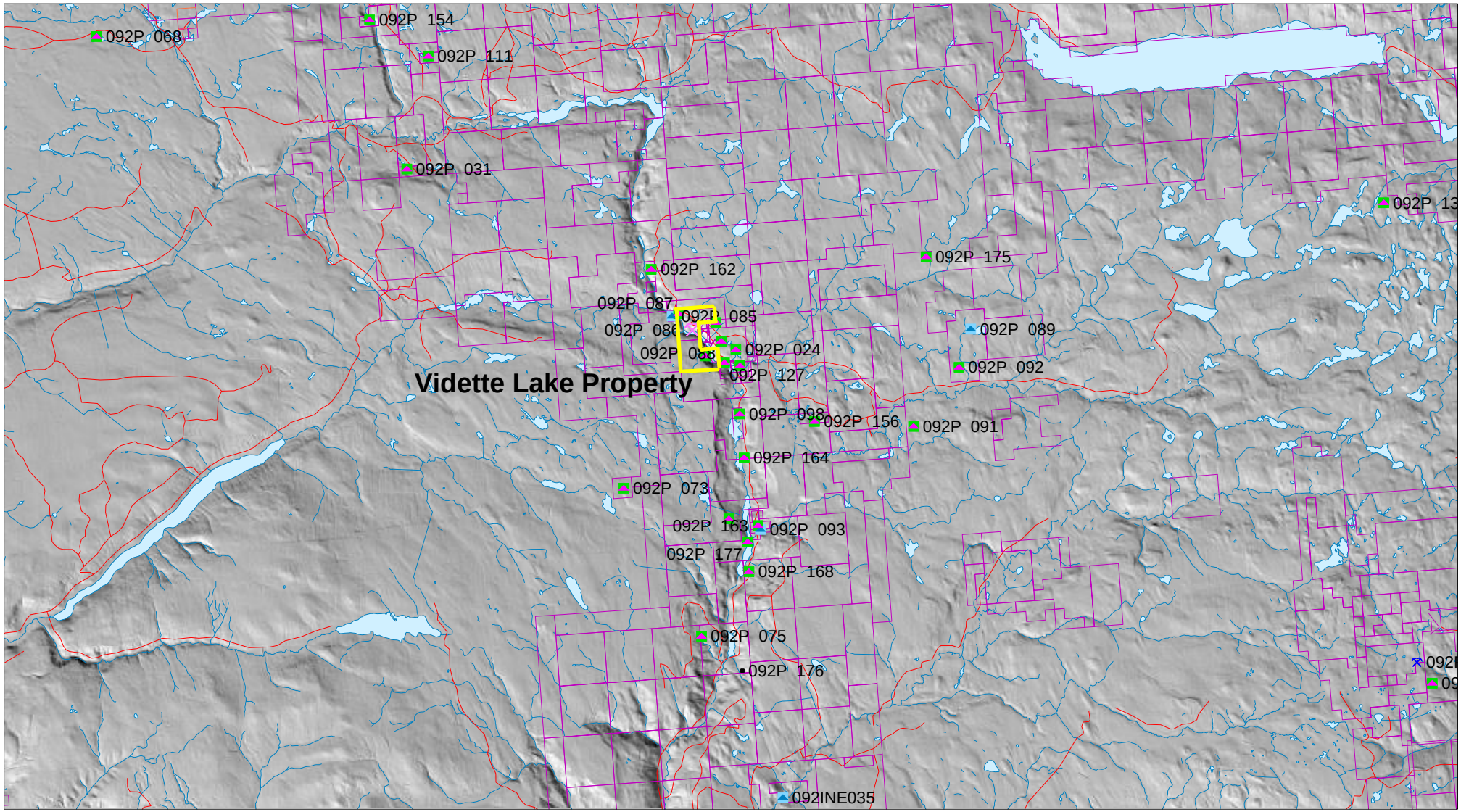


Figure 2a

Vidette Lake Regional Geology

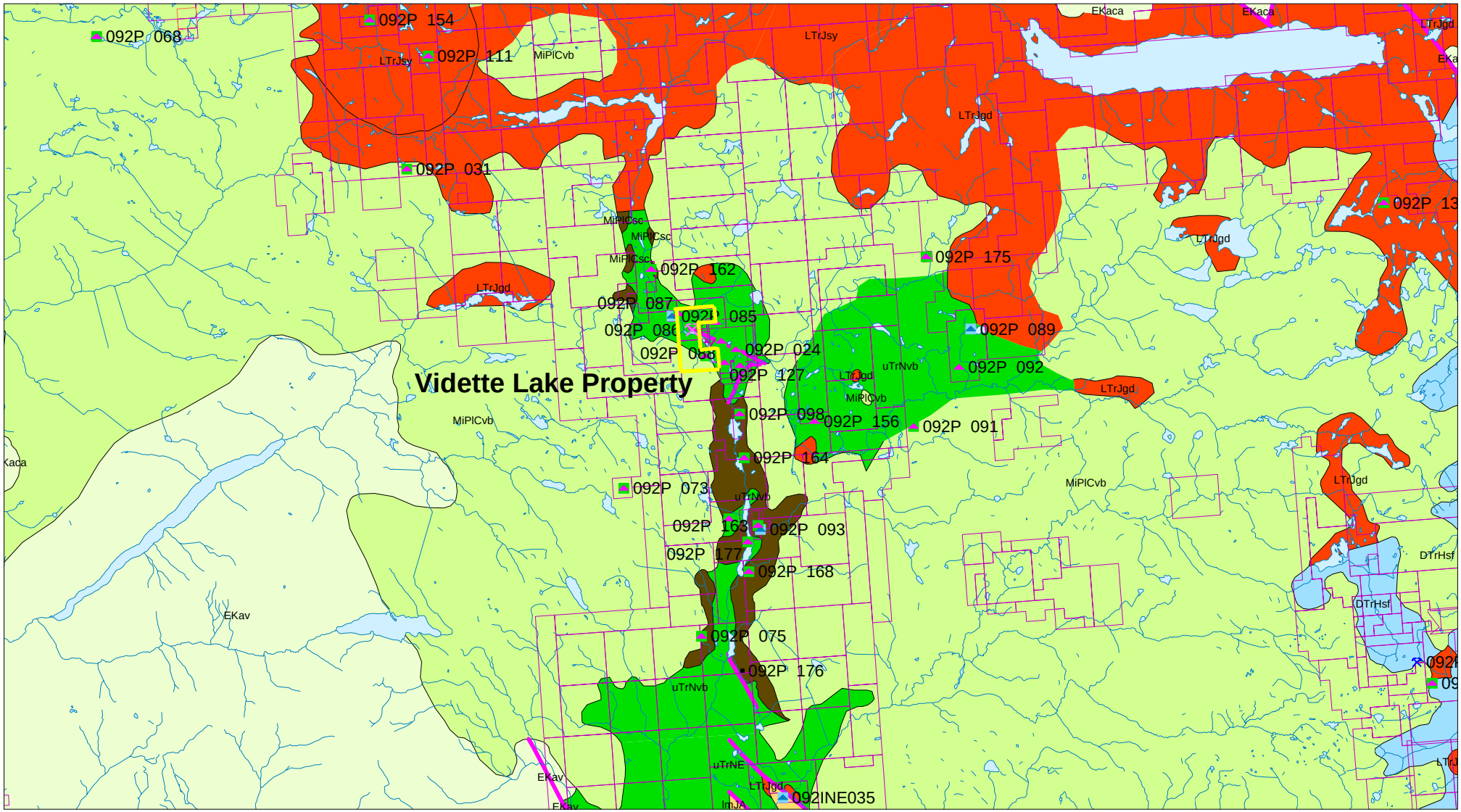


Figure 2b

Vidette Lake Regional Aeromagnetics

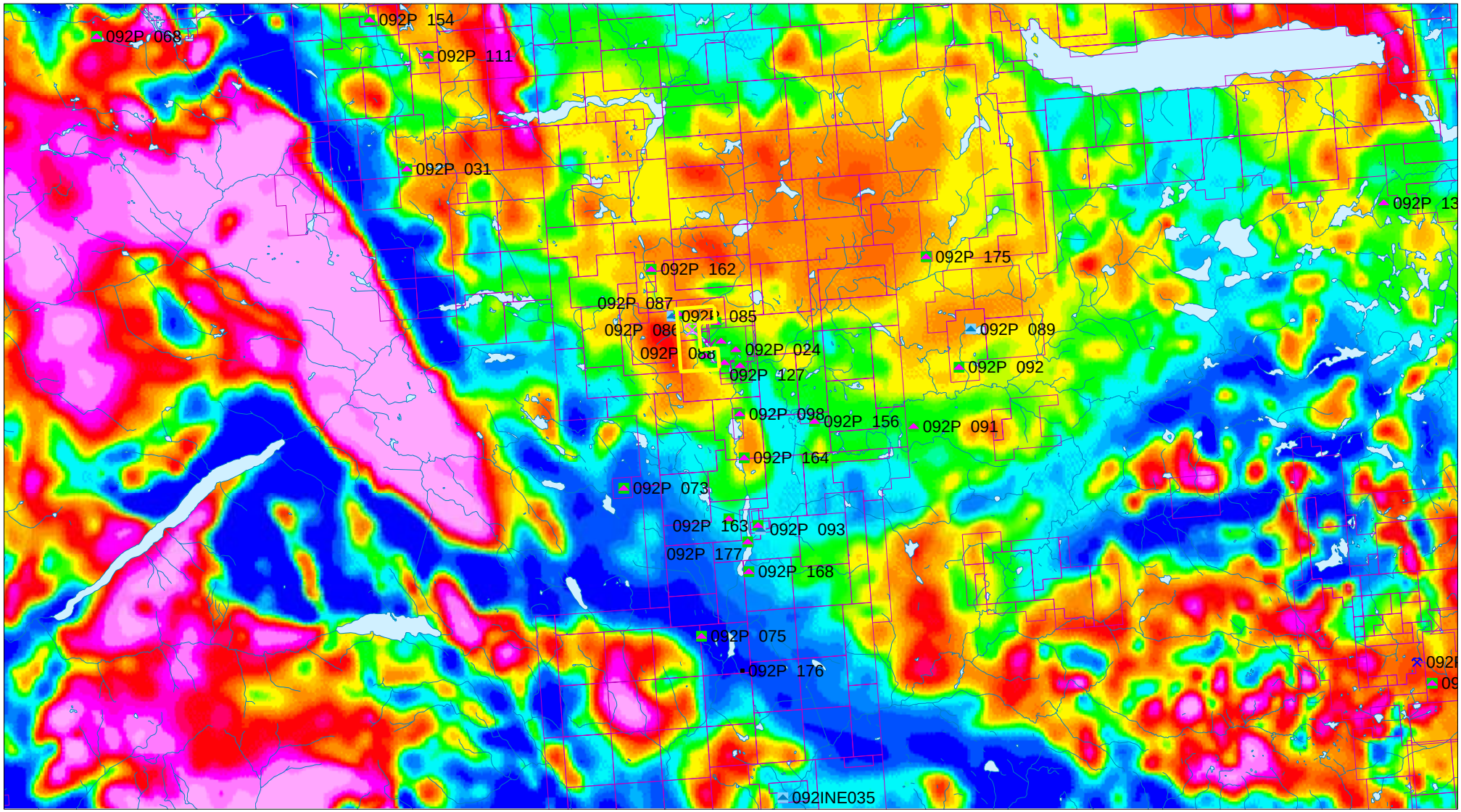


Figure 2c

Vidette Lake Regional Gravity

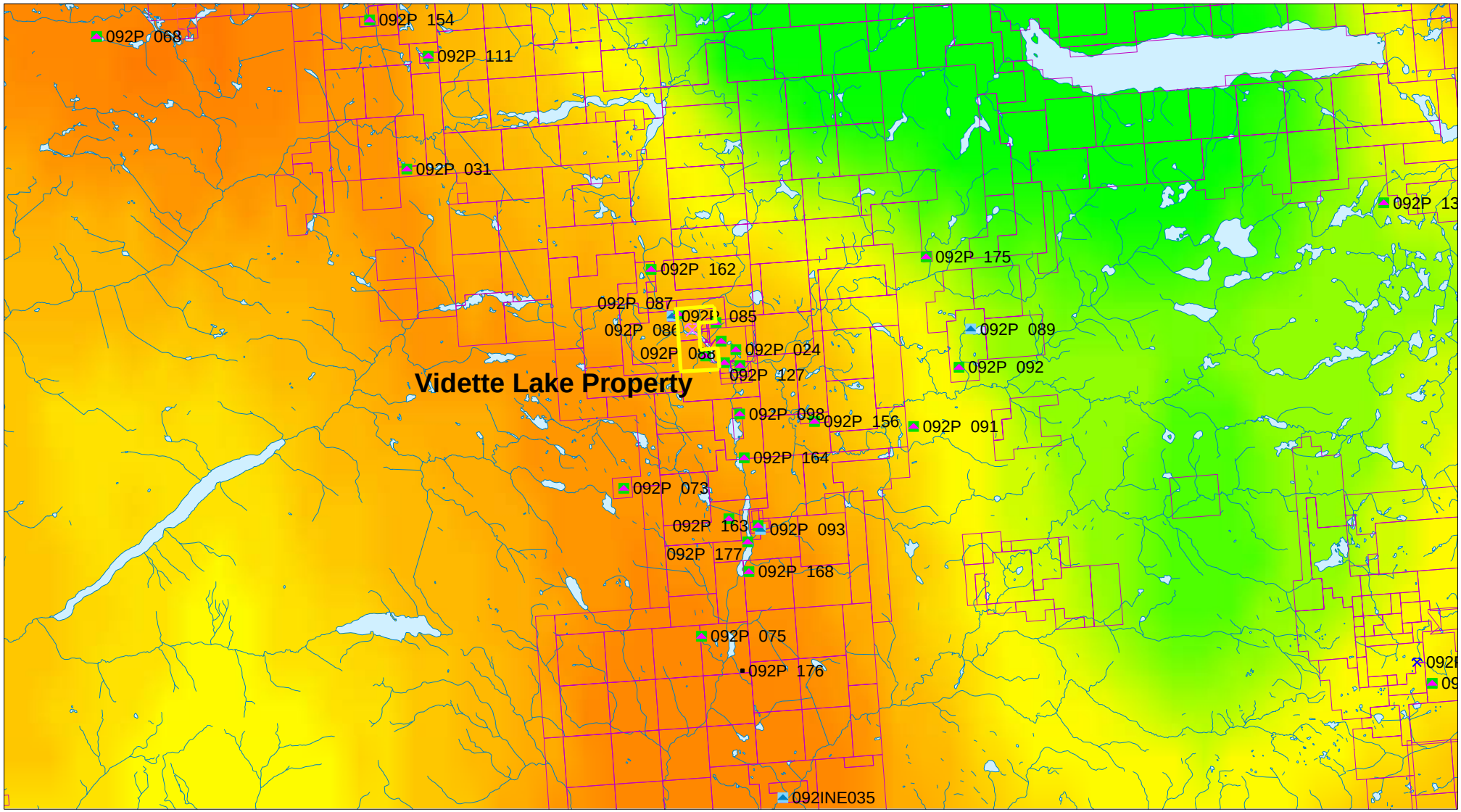


Figure 2d

Vidette Lake RGS Copper

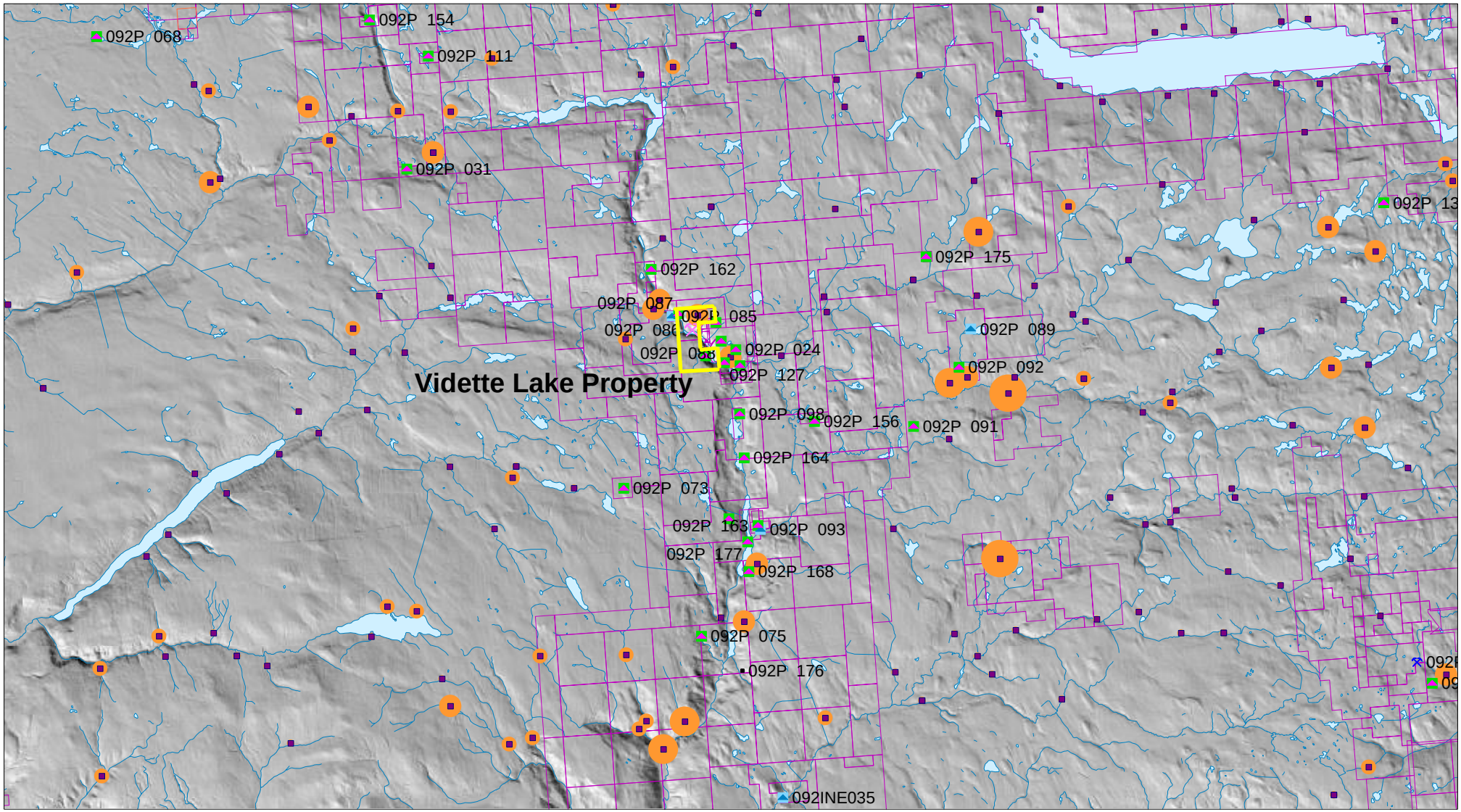


Figure 2e

Vidette Lake RGS Gold

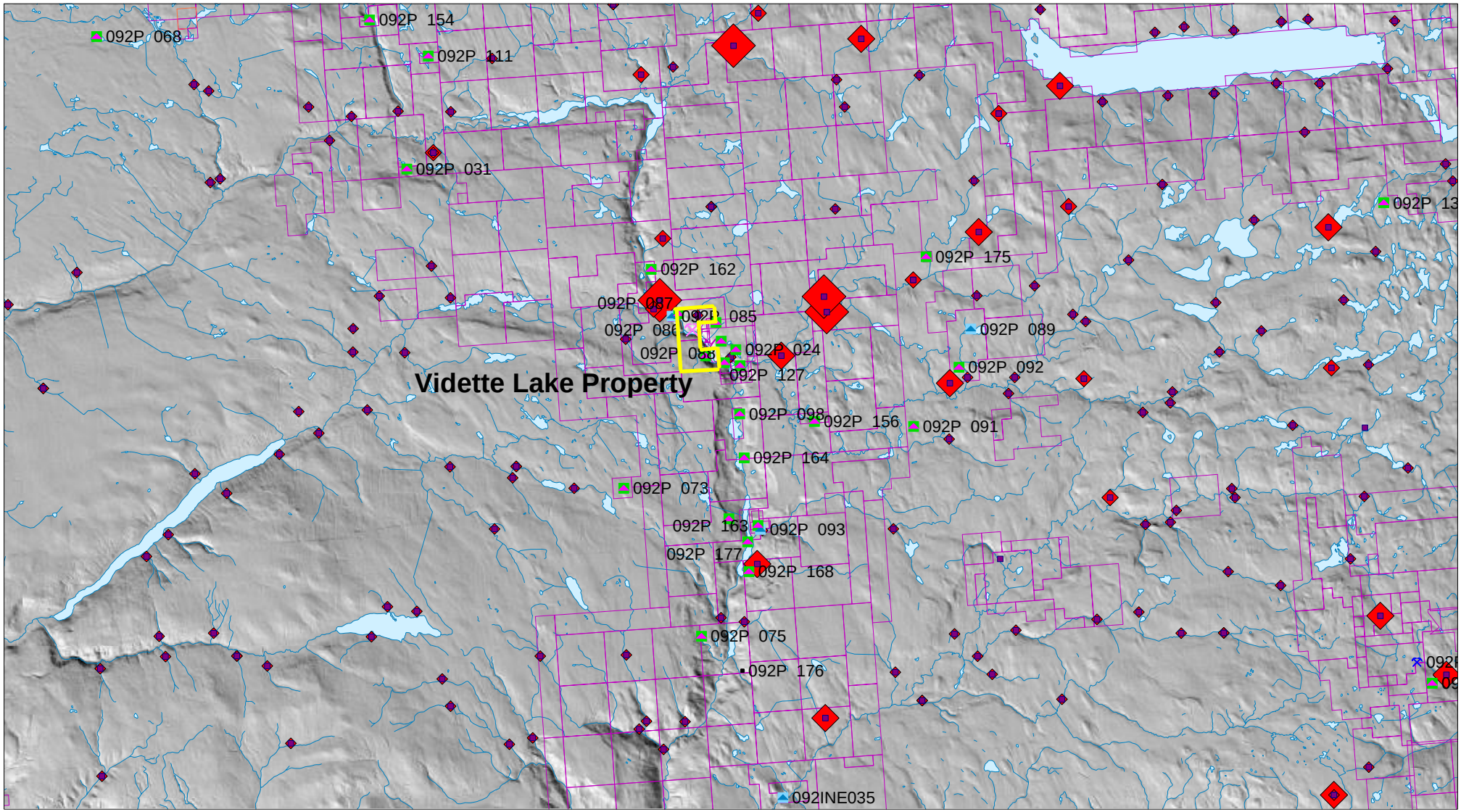
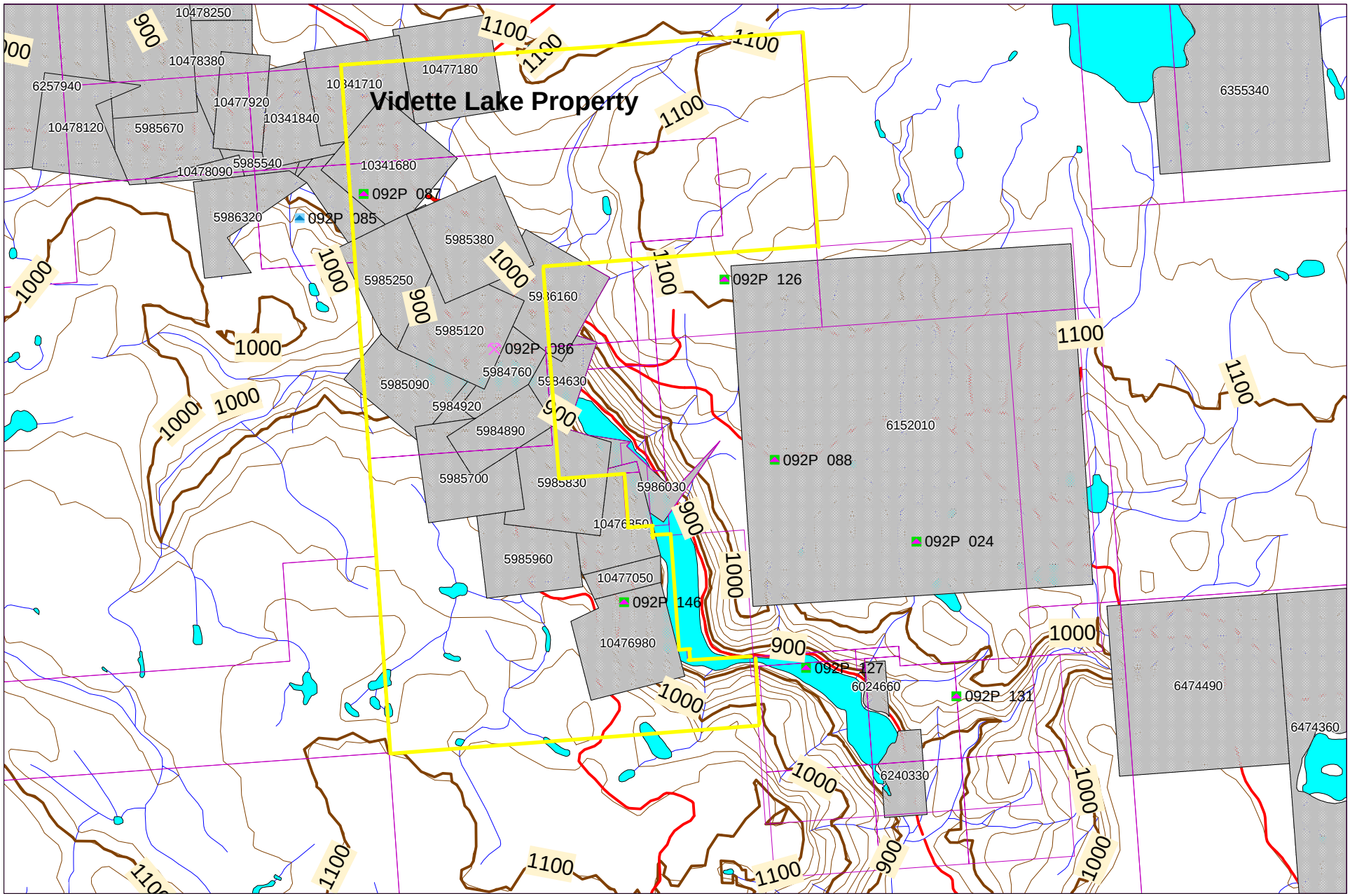


Figure 2f

Vidette Lake Project Infrastructure



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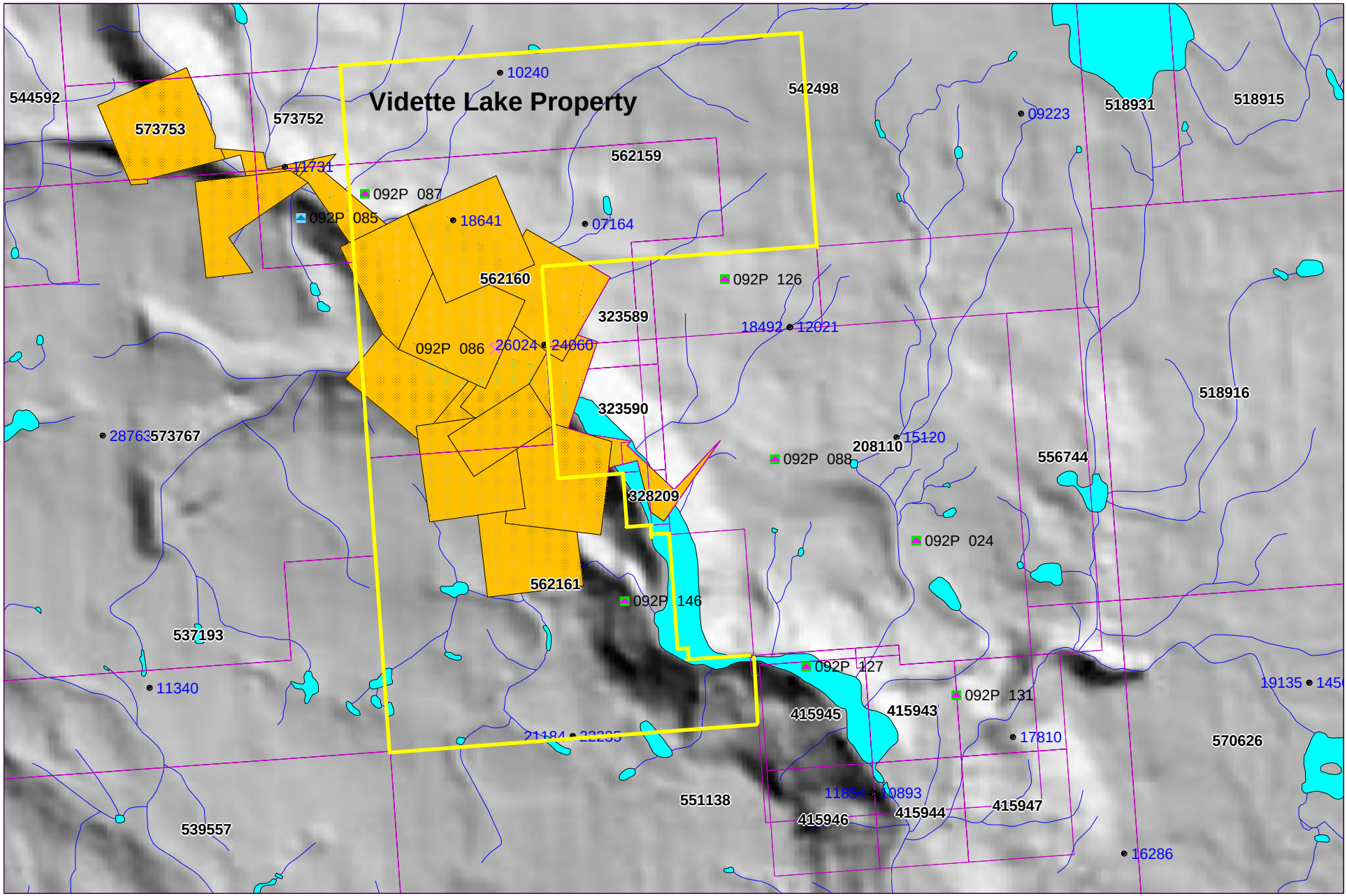
500 0 500 1,000 1,500

METERS

N

Figure 3a

Vidette Lake Project Mineral Tenures



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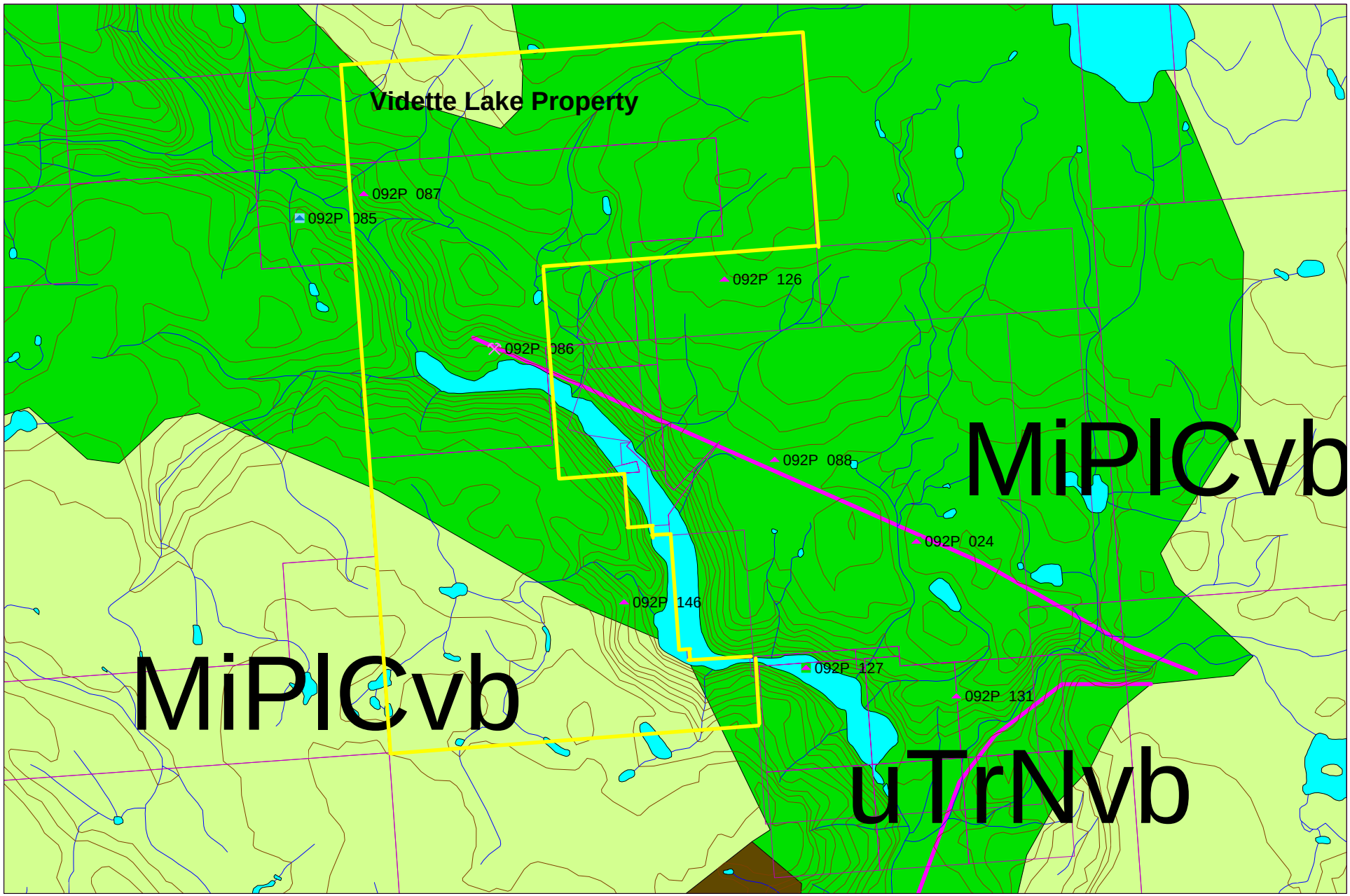
METERS

N

Figure 3b

Vidette Lake Project Geology



SCALE 1 : 25,000

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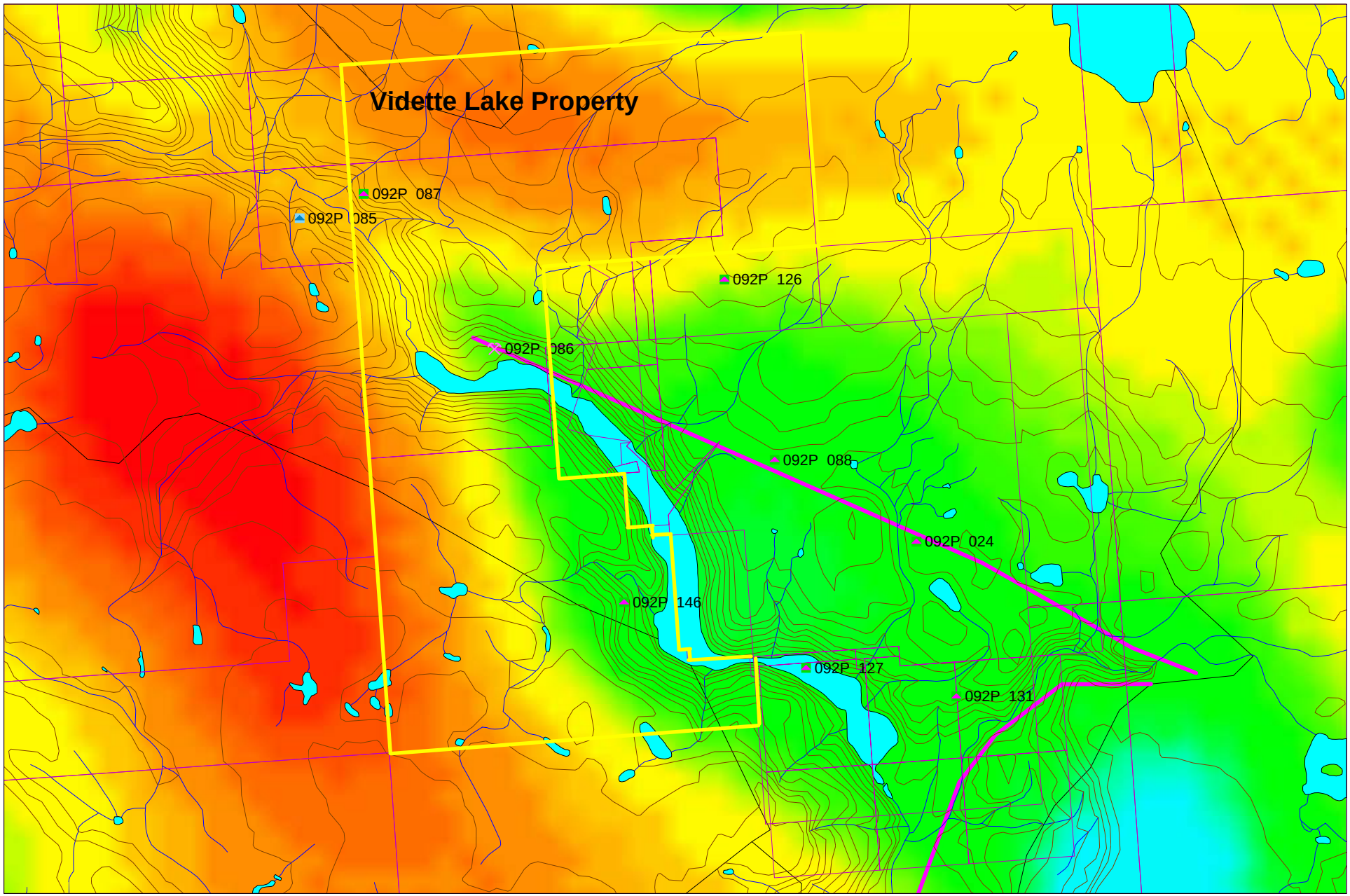
METERS

N

Figure 3c

Vidette Lake Project Aeromagnetics



SCALE 1 : 25,000

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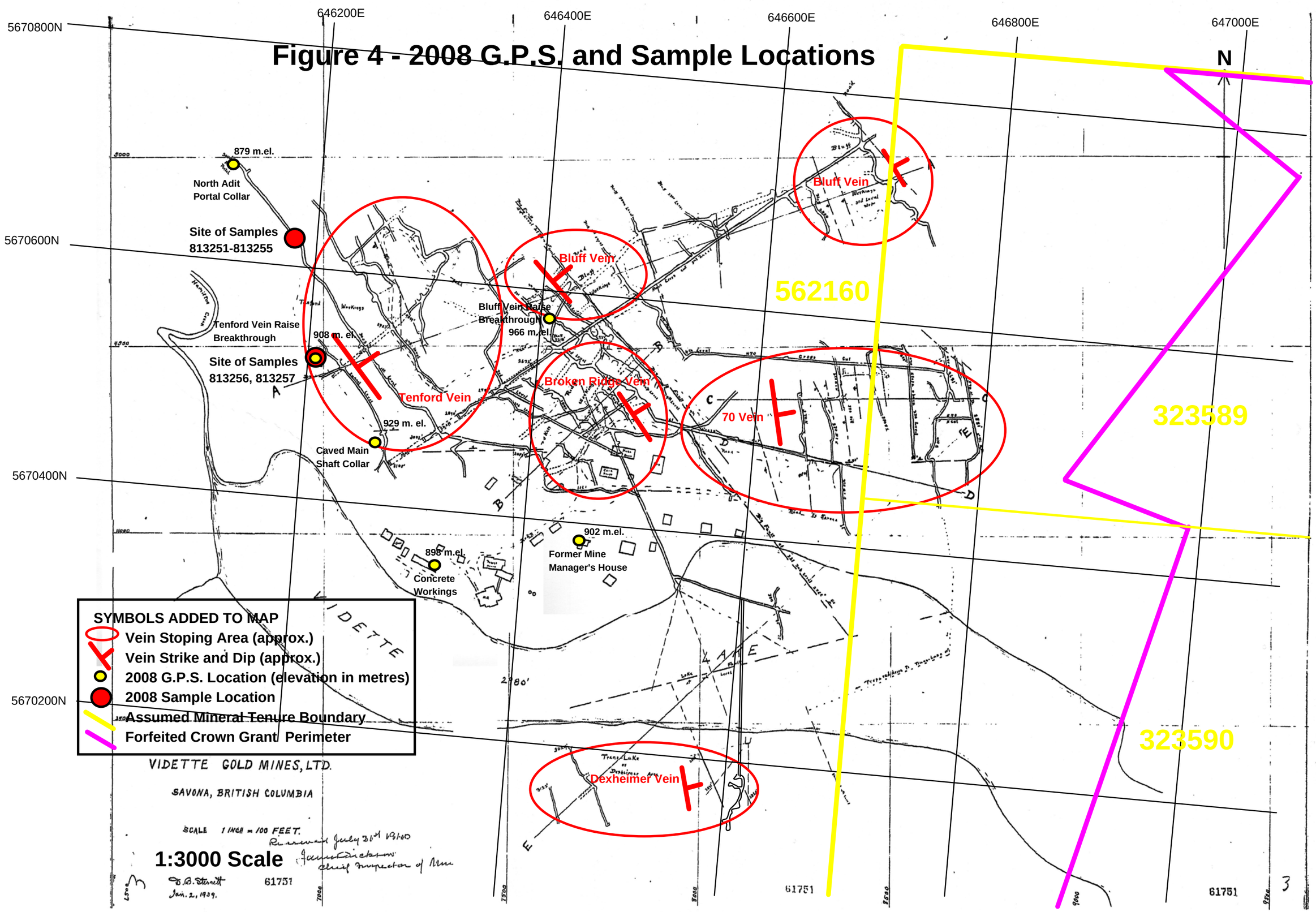
METERS

N

Figure 3d

Figure 4 - 2008 G.P.S. and Sample Locations



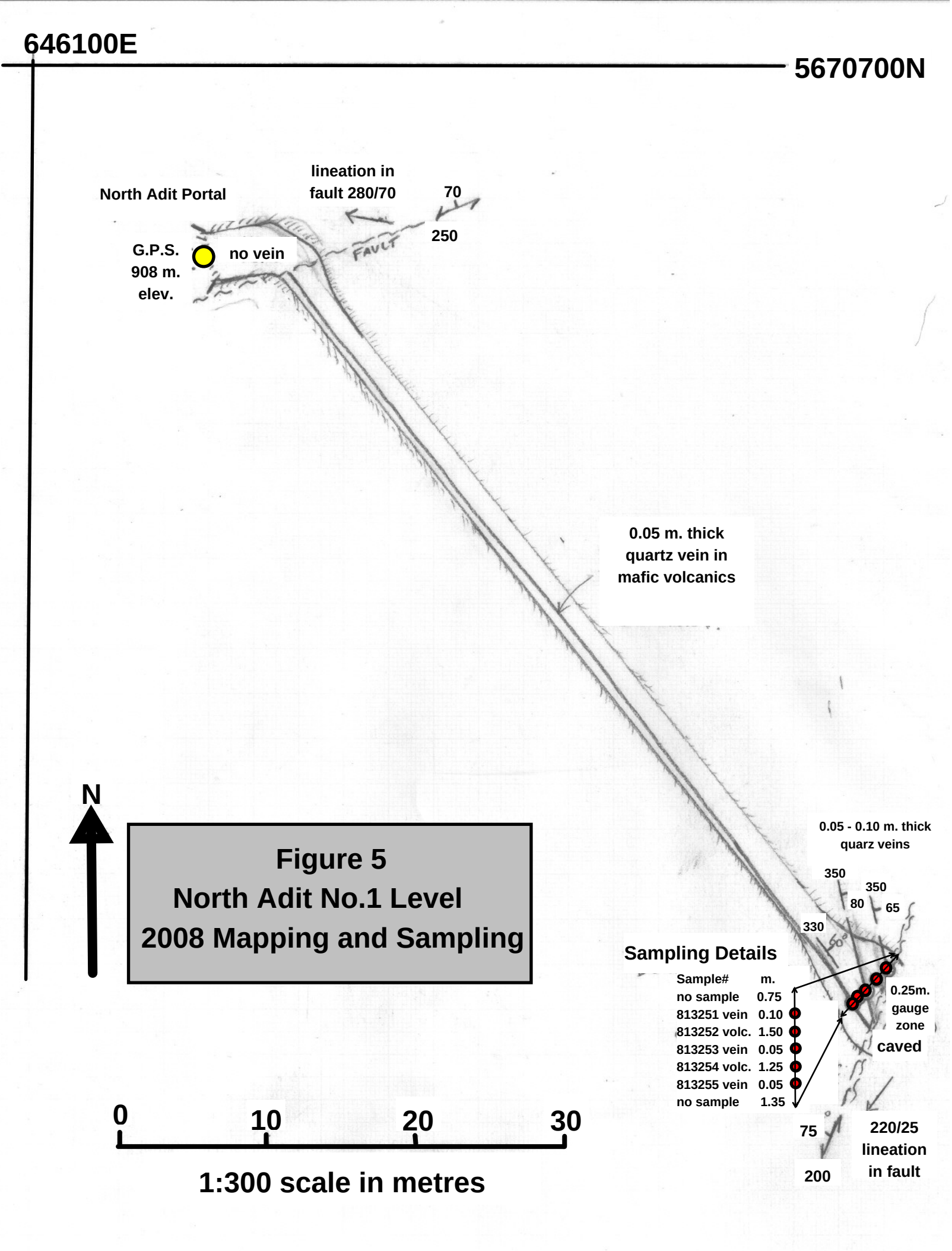


Figure 5
North Adit No.1 Level
2008 Mapping and Sampling

Appendix 1
MINFILE Record Summaries
And
Mineral Deposit Profiles

EPITHERMAL Au-Ag: LOW SULPHIDATION

H05

by A. Panteleyev
British Columbia Geological Survey

Panteleyev, A.(1996): Epithermal Au-Ag: Low Sulphidation, in Selected British Columbia Mineral Deposit Profiles, Volume 2 - Metallic Deposits, Lefebure, D.V. and Höy, T, Editors, British Columbia Ministry of Employment and Investment, Open File 1996-13, pages 41-44.

IDENTIFICATION

SYNONYMS: (Epithermal) adularia-sericite; quartz-adularia, Comstock, Sado-type; bonanza Au-Ag; alkali chloride (hydrothermal).

COMMODITIES (*BYPRODUCTS*): Au, Ag (Pb, Zn, Cu).

EXAMPLES (British Columbia (MINFILE #) - *International*): Toodoggone district deposits - Lawyers (094E 066), Baker (094E 026), Shas (094E 050); Blackdome (092O 050, 092O 051, 092O 052, 092O 053); Premier Gold (Silbak Premier), (104B 054); Cinola (103F 034); *Comstock, Aurora (Nevada, USA), Bodie (California, USA), Creede (Colorado, USA), Republic (Washington, USA), El Bronce (Chile), Guanajuato (Mexico), Sado, Hishikari (Japan), Colqui (Peru), Baguio (Philippines) Ladolam (Lihir, Papua- New Guinea)*.

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Quartz veins, stockworks and breccias carrying gold, silver, electrum, argentite and pyrite with lesser and variable amounts of sphalerite, chalcopyrite, galena, rare tetrahedrite and sulphosalt minerals form in high- level (epizonal) to near-surface environments. The ore commonly exhibits open- space filling textures and is associated with volcanic-related hydrothermal to geothermal systems.

TECTONIC SETTING: Volcanic island and continent-margin magmatic arcs and continental volcanic fields with extensional structures.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: High-level hydrothermal systems from depths of ~1 km to surficial hotspring settings. Regional-scale fracture systems related to grabens, (resurgent) calderas, flow-dome complexes and rarely, maar diatremes. Extensional structures in volcanic fields (normal faults, fault splays, ladder veins and cymoid loops, etc.) are common; locally graben or caldera-fill clastic rocks are present. High-level (subvolcanic) stocks and/or dikes and pebble breccia diatremes occur in some areas. Locally resurgent or domal structures are related to underlying intrusive bodies.

AGE OF MINERALIZATION: Any age. Tertiary deposits are most abundant; in B.C. Jurassic deposits are important. Deposits of Paleozoic age are described in Australia. Closely related to the host volcanic rocks but invariably slightly younger in age (0.5 to 1 Ma, more or less).

HOST/ASSOCIATED ROCK TYPES: Most types of volcanic rocks; calcalkaline andesitic

compositions predominate. Some deposits occur in areas with bimodal volcanism and extensive subaerial ashflow deposits. A less common association is with alkalic intrusive rocks and shoshonitic volcanics. Clastic and epiclastic sediments in intra-volcanic basins and structural depressions.

DEPOSIT FORM: Ore zones are typically localized in structures, but may occur in permeable lithologies. Upward-flaring ore zones centred on structurally controlled hydrothermal conduits are typical. Large (> 1 m wide and hundreds of metres in strike length) to small veins and stockworks are common with lesser disseminations and replacements. Vein systems can be laterally extensive but ore shoots have relatively restricted vertical extent. High-grade ores are commonly found in dilational zones in faults at flexures, splays and in cymoid loops.

TEXTURE/STRUCTURE: Open-space filling, symmetrical and other layering, crustification, comb structure, colloform banding and multiple brecciation.

ORE MINERALOGY (Principal and *subordinate*): Pyrite, electrum, gold, silver, argentite; c*halcopyrite, sphalerite, galena, tetrahedrite, silver sulphosalt and/or selenide minerals*. Deposits can be strongly zoned along strike and vertically. Deposits are commonly zoned vertically over 250 to 350 m from a base metal poor, Au-Ag-rich top to a relatively Ag-rich base metal zone and an underlying base metal rich zone grading at depth into a sparse base metal, pyritic zone. From surface to depth, metal zones contain: Au-Ag-As-Sb-Hg, Au-Ag-Pb-Zn-Cu, Ag- Pb-Zn. In alkalic hostrocks tellurides, V mica (roscoelite) and fluorite may be abundant, with lesser molybdenite.

GANGUE MINERALOGY (Principal and *subordinate*): Quartz, amethyst, chalcedony, quartz pseudomorphs after calcite, calcite; *adularia, sericite, barite, fluorite, Ca- Mg-Mn-Fe carbonate minerals such as rhodochrosite, hematite and chlorite*.

ALTERATION MINERALOGY: Silicification is extensive in ores as multiple generations of quartz and chalcedony are commonly accompanied by adularia and calcite. Pervasive silicification in vein envelopes is flanked by sericite-illite- kaolinite assemblages. Intermediate argillic alteration [kaolinite-illite- montmorillonite (smectite)] formed adjacent to some veins; advanced argillic alteration (kaolinite-alunite) may form along the tops of mineralized zones. Propylitic alteration dominates at depth and peripherally,.

WEATHERING: Weathered outcrops are often characterized by resistant quartz ± alunite 'ledges' and extensive flanking bleached, clay-altered zones with supergene alunite, jarosite and other limonite minerals.

ORE CONTROLS: In some districts the epithermal mineralization is tied to a specific metallogenetic event, either structural, magmatic, or both. The veins are emplaced within a restricted stratigraphic interval generally within 1 km of the paleosurface. Mineralization near surface takes place in hotspring systems, or the deeper underlying hydrothermal conduits. At greater depth it can be postulated to occur above, or peripheral to, porphyry and possibly skarn mineralization. Normal faults, margins of grabens, coarse clastic caldera moat-fill units, radial and ring dike fracture sets and both hydrothermal and tectonic breccias are all ore fluid channeling structures. Through-going, branching, bifurcating, anastamosing and intersecting fracture systems are commonly mineralized. Ore shoots form where dilational openings and cymoid loops develop, typically where the strike or dip of veins change. Hangingwall fractures in mineralized structures are particularly favourable for high-grade ore.

GENETIC MODEL: These deposits form in both subaerial, predominantly felsic, volcanic fields in extensional and strike-slip structural regimes and island arc or continental andesitic stratovolcanoes above active subduction zones. Near- surface hydrothermal systems, ranging from hotspring at surface to deeper, structurally and permeability focused fluid flow zones are the sites of mineralization. The ore fluids are relatively dilute and cool solutions that are mixtures of magmatic and meteoric fluids. Mineral deposition takes place as the solutions undergo cooling and degassing by fluid mixing, boiling and decompression.

ASSOCIATED DEPOSIT TYPES: Epithermal Au-Ag: high sulphidation (H04); hotspring Au-Ag (H03); porphyry Cu±Mo±Au (L04) and related polymetallic veins (I05); placer gold (C01, C02).

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: Elevated values in rocks of Au, Ag, Zn, Pb, Cu and As, Sb, Ba, F, Mn; locally Te, Se and Hg.

GEOPHYSICAL SIGNATURE: VLF has been used to trace structures; radiometric surveys may outline strong potassic alteration of wallrocks. Detailed gravity surveys may delineate boundaries of structural blocks with large density contrasts.

OTHER EXPLORATION GUIDES: Silver deposits generally have higher base metal contents than Au and Au-Ag deposits. Drilling feeder zones to hotsprings and siliceous sinters may lead to identification of buried deposits. Prospecting for mineralized siliceous and silica-carbonate float or vein material with diagnostic open-space textures is effective.

ECONOMIC FACTORS

TYPICAL GRADE AND TONNAGE: The following data describe the median deposits based on worldwide mines and U.S.A. models:

- Au-Ag deposits (41 Comstock-type 'bonanza' deposits) - 0.77 Mt with 7.5 g/t Au, 110 g/t Ag and minor Cu, Zn and Pb. The highest base metal contents in the top decile of deposits all contain <0.1% Cu, Zn and 0.1% Pb
- Au-Cu deposits (20 Sado-type deposits) - 0.3 Mt with 1.3% g/t Au, 38 g/t Ag and >0.3% Cu; 10 % of the deposits contain, on average, about 0.75% Cu with one having >3.2% Cu.

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Mosier, D.L., Berger, B.R and Singer, D.A. (1986): Descriptive Model of Sado Epithermal Veins; in Mineral Deposits Models, Cox, D.P. and Singer, D.A., Editors, *U. S. Geological Survey*, Bulletin 1693, page 154.

Mosier, D.L. and Sato, T. (1986): Grade and Tonnage Model of Sado Epithermal Veins; in Mineral Deposits Models, Cox, D.P. and Singer, D.A., Editors, *U. S. Geological Survey*, Bulletin 1693, pages 155-157.

Mosier, D.L., Singer, D.A. and Berger, B.R (1986): Descriptive Model of Comstock Epithermal Veins; in Mineral Deposits Models, Cox, D.P. and D.A. Singer, D.A., Editors, *U. S. Geological Survey*, Bulletin 1693, pages 150-153.

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Mosier, D.L., Sato, T., Page, N.J., Singer, D.A. and Berger, B.R. (1986): Descriptive Model of Creede; in Mineral Deposits Models, Cox, D.P. and Singer, D.A., Editors, *U.S. Geological Survey*, Bulletin 1693, pages 145-149.

Panteleyev, A. (1991): Gold in the Canadian Cordillera - A Focus on Epithermal and Deeper

Deposits; in Ore Deposits, Tectonic and Metallogeny in the Canadian Cordillera, *B.C. Ministry of Energy, Mines and Petroleum Resources*, Paper 1991-4, pages 163-212.

Sillitoe, R.H. (1993): Epithermal Models: Genetic Types, Geometrical Controls and Shallow Features; in Mineral Deposit Modeling, Kirkham, R.V., Sinclair, W.D., Thorpe, R.I. and Duke, J.M., Editors, *Geological Association of Canada*, Special Paper 40, pages 403-417.

White, N.C. and Hedenquist, J.W. (1990): Epithermal Environments and Styles of Mineralization; Variations and their Causes and Guidelines for Exploration; in Epithermal Gold Mineralization of the Circum-Pacific; Geology, Geochemistry, Origin and Exploration, II; Hedenquist, J.W., White, N.C. and Siddeley, G., Editors, *Journal of Geochemical Exploration*, Volume 36, pages 445-474.

December 10, 1995

[H01] [H02] [H03] [H04] [H05] [H06] [H07] [H08] [Published Profile Index]
[Deposit Profiles]

Last Updated September 11, 2007

Au-QUARTZ VEINS

I01

by Chris Ash and Dani Alldrick
British Columbia Geological Survey

Ash, Chris and Alldrick, Dani (1996): Au-quartz Veins, in Selected British Columbia Mineral Deposit Profiles, Volume 2 - Metallic Deposits, Lefebure, D.V. and Hõy, T, Editors, British Columbia Ministry of Employment and Investment, Open File 1996-13, pages 53-56.

IDENTIFICATION

SYNONYMS: Mother Lode veins, greenstone gold, Archean lode gold, mesothermal gold-quartz veins, shear-hosted lode gold, low-sulphide gold-quartz veins, lode gold.

COMMODITIES (*BYPRODUCTS*): Au (Ag, Cu, Sb).

EXAMPLES (British Columbia (MINFILE #) - *Canada/ International*):

- Phanerozoic: Bralorne-Pioneer (092JNE001), Erickson (104P 029), Taurus (104P 012), Polaris-Taku (104K 003), Mosquito Creek (093H 010), Cariboo Gold Quartz (093H 019), Midnight (082FSW119); *Carson Hill, Jackson-Plymouth, Mother Lode district; Empire Star and Idaho-Maryland, Grass Valley district (California, USA); Alaska-Juneau, Jualin, Kensington (Alaska, USA), Ural Mountains (Russia)*.
- Archean: *Hollinger, Dome, McIntyre and Pamour, Timmins camp; Lake Shore, Kirkland Lake camp; Campbell, Madsen, Red Lake camp; Kerr-Addison, Larder Lake camp (Ontario, Canada), Lamaque and Sigma, Val d'Or camp (Quebec, Canada); Granny Smith, Kalgoorlie and Golden Mile (Western Australia); Kolar (Karnataka, India), Blanket-Vubachikwe (Zimbabwe, Africa)*.

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Gold-bearing quartz veins and veinlets with minor sulphides crosscut a wide variety of hostrocks and are localized along major regional faults and related splays. The wallrock is typically altered to silica, pyrite and muscovite within a broader carbonate alteration halo.

TECTONIC SETTINGS:

- Phanerozoic: Contained in moderate to gently dipping fault/suture zones related to continental margin collisional tectonism. Suture zones are major crustal breaks which are characterized by dismembered ophiolitic remnants between diverse assemblages of island arcs, subduction complexes and continental-margin clastic wedges.
- Archean: Major transcrustal structural breaks within stable cratonic terranes. May represent remnant terrane collisional boundaries.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: Veins form within fault and joint systems produced by regional compression or transpression (terrane collision), including

major listric reverse faults, second and third-order splays. Gold is deposited at crustal levels within and near the brittle-ductile transition zone at depths of 6-12 km, pressures between 1 to 3 kilobars and temperatures from 200o to 400 oC. Deposits may have a vertical extent of up to 2 km, and lack pronounced zoning.

AGE OF MINERALIZATION: Mineralization is post-peak metamorphism (i.e. late syncollisional) with gold-quartz veins particularly abundant in the Late Archean and Mesozoic.

- Phanerozoic: In the North America Cordillera gold veins are post-Middle Jurassic and appear to form immediately after accretion of oceanic terranes to the continental margin. In British Columbia deposits are mainly Middle Jurassic (~ 165-170 Ma) and Late Cretaceous (~ 95 Ma). In the Mother Lode belt they are Middle Jurassic (~ 150 Ma) and those along the Juneau belt in Alaska are of Early Tertiary (~56-55 Ma).
- Archean: Ages of mineralization for Archean deposits are well constrained for both the Superior Province, Canadian Shield (~ 2.68 to 2.67 Ga) and the Yilgarn Province, Western Australia (~ 2.64 to 2.63 Ga).

HOST/ASSOCIATED ROCK TYPES: Lithologically highly varied, usually of greenschist metamorphic grade, ranging from virtually undeformed to totally schistose.

- Phanerozoic: Mafic volcanics, serpentinite, peridotite, dunite, gabbro, diorite, trondhjemite/plagiogranites, graywacke, argillite, chert, shale, limestone and quartzite, felsic and intermediate intrusions.
- Archean: Granite-greenstone belts - mafic, ultramafic (komaitiitic) and felsic volcanics, intermediate and felsic intrusive rocks, graywacke and shale.

DEPOSIT FORM: Tabular fissure veins in more competent host lithologies, veinlets and stringers forming stockworks in less competent lithologies. Typically occur as a system of en echelon veins on all scales. Lower grade bulk-tonnage styles of mineralization may develop in areas marginal to veins with gold associated with disseminated sulphides. May also be related to broad areas of fracturing with gold and sulphides associated with quartz veinlet networks.

TEXTURE/STRUCTURE: Veins usually have sharp contacts with wallrocks and exhibit a variety of textures, including massive, ribboned or banded and stockworks with anastamosing gashes and dilations. Textures may be modified or destroyed by subsequent deformation.

ORE MINERALOGY (Principal and *subordinate*): Native gold, pyrite, arsenopyrite, *galena, sphalerite, chalcopyrite, pyrrhotite, tellurides, scheelite, bismuth, cosalite, tetrahedrite, stibnite, molybdenite, gersdorffite (NiAsS), bismuthimite (Bi2S2), tetradymite (Bi2Te2S)*.

GANGUE MINERALOGY (Principal and *subordinate*): Quartz, carbonates (ferroan-dolomite, ankerite ferroan-magnesite, calcite, siderite), *albite, mariposite (fuchsite), sericite, muscovite, chlorite, tourmaline, graphite*.

ALTERATION MINERALOGY: Silicification, pyritization and potassium metasomatism generally occur adjacent to veins (usually within a metre) within broader zones of carbonate alteration, with or without ferroan dolomite veinlets, extending up to tens of metres from the veins. Type of carbonate alteration reflects the ferromagnesian content of the primary host lithology; ultramafics rocks - talc, Fe-magnesite; mafic volcanic rocks - ankerite, chlorite; sediments - graphite and pyrite; felsic to intermediate intrusions - sericite, albite, calcite, siderite, pyrite. Quartz-carbonate altered rock (listwanite) and pyrite are often the most prominent alteration minerals in the wallrock. Fuchsite, sericite, tourmaline and scheelite are common where veins are associated with felsic to intermediate intrusions.

WEATHERING: Distinctive orange-brown limonite due to the oxidation of Fe-Mg carbonates cut by white veins and veinlets of quartz and ferroan dolomite. Distinctive green Cr-mica may also be present. Abundant quartz float in overburden.

ORE CONTROLS: Gold-quartz veins are found within zones of intense and pervasive carbonate alteration along second order or later faults marginal to transcrustal breaks. They are commonly closely associated with, late syncollisional, structurally controlled intermediate to felsic magmatism. Gold veins are more commonly economic where hosted by relatively large, competent units, such as intrusions or blocks of obducted oceanic crust. Veins are usually at a high angle to the primary collisional fault zone.

- Phanerozoic: Secondary structures at a high angle to relatively flat-lying to moderately dipping collisional suture zones.
- Archean: Steep, transcrustal breaks; best deposits overall are in areas of greenstone.

ASSOCIATED DEPOSIT TYPES: Gold placers (C01, C02), sulphide manto Au (J04), silica veins (I07); iron formation Au (I04) in the Archean.

GENETIC MODEL: Gold quartz veins form in lithologically heterogeneous, deep transcrustal fault zones that develop in response to terrane collision. These faults act as conduits for CO2-H2O-rich (5-30 mol% CO2), low salinity (<3 wt% NaCl) aqueous fluids, with high Au, Ag, As, (±Sb, Te, W, Mo) and low Cu, Pb, Zn metal contents. These fluids are believed to be tectonically or seismically driven by a cycle of pressure build-up that is released by failure and pressure reduction followed by sealing and repetition of the process (Sibson et al., 1988). Gold is deposited at crustal levels within and near the brittle- ductile transition zone with deposition caused by sulphidation (the loss of H2S due to pyrite deposition) primarily as a result of fluid-wallrock reactions, other significant factors may involve phase separation and fluid pressure reduction. The origin of the mineralizing fluids remains controversial, with metamorphic, magmatic and mantle sources being suggested as possible candidates. Within an environment of tectonic crustal thickening in response to terrane collision, metamorphic devolitization or partial melting (anatexis) of either the lower crust or subducted slab may generate such fluids.

COMMENTS: These deposits may be a difficult deposit to evaluate due to "nugget effect", hence the adage, “Drill for structure, drift for grade”. These veins have also been mined in British Columbia as a source of silica for smelter flux.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: Elevated values of Au, Ag, As, Sb, K, Li, Bi, W, Te and B ± (Cd, Cu, Pb, Zn and Hg) in rock and soil, Au in stream sediments.

GEOPHYSICAL SIGNATURE: Faults indicated by linear magnetic anomalies. Areas of alteration indicated by negative magnetic anomalies due to destruction of magnetite as a result of carbonate alteration.

OTHER EXPLORATION GUIDES: Placer gold or elevated gold in stream sediment samples is an excellent regional and property-scale guide to gold-quartz veins. Investigate broad 'deformation envelopes' adjacent to regional listric faults where associated with carbonate alteration. Alteration and structural analysis can be used to delineate prospective ground. Within carbonate alteration zones, gold is typically only in areas containing quartz, with or without sulphides. Serpentinite bodies, if present, can be used to delineate favourable regional structures. Largest concentrations of free gold are commonly at, or near, the intersection of quartz veins with serpentinized and carbonate-altered ultramafic rocks.

ECONOMIC FACTORS

TYPICAL GRADE AND TONNAGE: Individual deposits average 30 000 t with grades of 16 g/t Au and 2.5 g/t Ag (Berger, 1986) and may be as large as 40 Mt. Many major producers in the Canadian Shield range from 1 to 6 Mt at grades of 7 g/t Au (Thorpe and Franklin, 1984). The largest gold-quartz vein deposit in British Columbia is the Bralorne-Pioneer which produced in excess of 117 800 kilograms of Au from ore with an average grade of 9.3 g/t.

ECONOMIC LIMITATIONS: These veins are usually less than 2m wide and therefore, only amenable to underground mining.

IMPORTANCE: These deposits are a major source of the world's gold production and account for approximately a quarter of Canada's output. They are the most prolific gold source after the ores of the Witwatersrand basin.

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[I01] [I02] [I03] [I04] [I05] [I06] [I08] [I09] [I10] [I11] [I14] [I15] [I16] [I17] [PublishedProfile Index] [Deposit Profiles]

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PORPHYRY Cu+/-Mo+/-Au

L04

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Panteleyev, A. (1995): Porphyry Cu+/-Mo+/-Au, in Selected British Columbia Mineral Deposit Profiles, Volume 1 - Metallics and Coal, Lefebure, D.V. and Ray, G.E., Editors, British Columbia Ministry of Energy of Employment and Investment, Open File 1995-20, pages 87-92.

IDENTIFICATION

SYNONYM: Calcalkaline porphyry Cu, Cu-Mo, Cu-Au.

COMMODITIES (*BYPRODUCTS*): Cu, Mo and Au are generally present but quantities range from insufficient for economic recovery to major ore constituents. Minor Ag in most deposits; rare recovery of Re from Island Copper mine.

EXAMPLES (British Columbia - *Canada/International*):

- Volcanic type deposits (Cu + Au * Mo) - Fish Lake (092O 041), Kemess (094E 021,094), Hushamu (EXPO, 092L 240), Red Dog (092L 200), Poison Mountain (092O 046), Bell (093M 001), Morrison (093M 007), Island Copper (092L 158); *Dos Pobres (USA); Far Southeast (Lepanto/Mankayan), Dizon, Guianaong, Taysan and Santo Thomas II (Philippines), Frieda River and Panguna (Papua New Guinea)*.
- Classic deposits (Cu + Mo * Au) - Brenda (092HNE047), Berg (093E 046), Huckleberrry (093E 037), Schaft Creek (104G 015); *Casino (Yukon, Canada), Inspiration, Morenci, Ray, Sierrita-Experanza, Twin Buttes, Kalamazoo and Santa Rita (Arizona, USA), Bingham (Utah, USA),El Salvador, (Chile), Bajo de la Alumbrera (Argentina)*.
- Plutonic deposits (Cu * Mo) - Highland Valley Copper (092ISE001,011,012,045), Gibraltar (093B012,007), Catface (092F 120); *Chuquicamata, La Escondida and Quebrada Blanca (Chile)*.

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Stockworks of quartz veinlets, quartz veins, closely spaced fractures and breccias containing pyrite and chalcopyrite with lesser molybdenite, bornite and magnetite occur in large zones of economically bulk-mineable mineralization in or adjoining porphyritic intrusions and related breccia bodies. Disseminated sulphide minerals are present, generally in subordinate amounts. The mineralization is spatially, temporally and genetically associated with hydrothermal alteration of the hostrock intrusions and wallrocks.

TECTONIC SETTINGS: In orogenic belts at convergent plate boundaries, commonly linked to subduction-related magmatism. Also in association with emplacement of high-level stocks during extensional tectonism related to strike-slip faulting and back-arc spreading following continent margin accretion.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: High-level (epizonal) stock emplacement levels in volcano-plutonic arcs, commonly oceanic volcanic island and continent-margin arcs. Virtually any type of country rock can be mineralized, but commonly the high-level stocks and related dikes intrude their coeval and cogenetic volcanic piles.

AGE OF MINERALIZATION: Two main periods in the Canadian Cordillera: the Triassic/Jurassic (210-180 Ma) and Cretaceous/Tertiary (85-45 Ma). Elsewhere deposits are mainly Tertiary, but range from Archean to Quaternary.

HOST/ASSOCIATED ROCK TYPES: Intrusions range from coarse-grained phaneritic to porphyritic stocks, batholiths and dike swarms; rarely pegmatitic. Compositions range from calcalkaline quartz diorite to granodiorite and quartz monzonite. Commonly there is multiple emplacement of successive intrusive phases and a wide variety of breccias. Alkalic porphyry Cu-Au deposits are associated with syenitic and other alkalic rocks and are considered to be a a distinct deposit type (see model L03).

DEPOSIT FORM: Large zones of hydrothermally altered rock contain quartz veins and stockworks, sulphide-bearing veinlets; fractures and lesser disseminations in areas up to 10 km2 in size, commonly coincident wholly or in part with hydrothermal or intrusion breccias and dike swarms. Deposit boundaries are determined by economic factors that outline ore zones within larger areas of low-grade, concentrically zoned mineralization. Cordilleran deposits are commonly subdivided according to their morphology into three classes - classic, volcanic and plutonic (see Sutherland Brown, 1976; McMillan and Panteleyev, 1988):

* Volcanic type deposits (e.g. Island Copper) are associated with multiple intrusions in subvolcanic settings of small stocks, sills, dikes and diverse types of intrusive breccias. Reconstruction of volcanic landforms, structures, vent-proximal extrusive deposits and subvolcanic intrusive centres is possible in many cases, or can be inferred. Mineralization at depths of 1 km, or less, is mainly associated with breccia development or as lithologically controlled preferential replacement in hostrocks with high primary permeability. Propylitic alteration is widespread and generally flanks early, centrally located potassic alteration; the latter is commonly well mineralized. Younger mineralized phyllic alteration commonly overprints the early mineralization. Barren advanced argillic alteration is rarely present as a late, high-level hydrothermal carapace.
* Classic deposits (e.g., Berg) are stock related with multiple emplacements at shallow depth (1 to 2 km) of generally equant, cylindrical porphyritic intrusions. Numerous dikes and breccias of pre, intra, and post-mineralization age modify the stock geometry. Orebodies occur along margins and adjacent to intrusions as annular ore shells. Lateral outward zoning of alteration and sulphide minerals from a weakly mineralized potassic/propylitic core is usual. Surrounding ore zones with potassic (commonly biotite-rich) or phyllic alteration contain molybdenite * chalcopyrite, then chalcopyrite and a generally widespread propylitic, barren pyritic aureole or 'halo'.
* Plutonic deposits (e.g., the Highland Valley deposits) are found in large plutonic to batholithic intrusions immobilized at relatively deep levels, say 2 to 4 km. Related dikes and intrusive breccia bodies can be emplaced at shallower levels. Hostrocks are phaneritic coarse grained to porphyritic. The intrusions can display internal compositional differences as a result of differentiation with gradational to sharp boundaries between the different phases of magma emplacement. Local swarms of dikes, many with associated breccias, and fault zones are sites of mineralization. Orebodies around silicified alteration zones tend to occur as diffuse vein stockworks carrying chalcopyrite, bornite and minor pyrite in intensely fractured rocks but, overall, sulphide minerals are sparse. Much of the early potassic and phyllic alteration in central parts of orebodies is restricted to the margins of mineralized fractures as selvages. Later phyllic-argillic alteration forms envelopes on the veins and fractures and is more pervasive and widespread. Propylitic alteration is widespread but unobtrusive and is indicated

by the presence of rare pyrite with chloritized mafic minerals, saussuritized plagioclase and small amounts of epidote.

TEXTURE/STRUCTURE: Quartz, quartz-sulphide and sulphide veinlets and stockworks; sulphide grains in fractures and fracture selvages. Minor disseminated sulphides commonly replacing primary mafic minerals. Quartz phenocrysts can be partially resorbed and overgrown by silica.

ORE MINERALOGY (Principal and *subordinate*): Pyrite is the predominant sulphide mineral; in some deposits the Fe oxide minerals magnetite, and rarely hematite, are abundant. Ore minerals are chalcopyrite; molybdenite, lesser bornite and rare (primary) chalcocite. Subordinate minerals are *tetrahedrite/tennantite, enargite and minor gold , electrum and arsenopyrite*. In many deposits late veins commonly contain galena and sphalerite in a gangue of quartz, calcite and barite.

GANGUE MINERALOGY (Principal and *subordinate*): Gangue minerals in mineralized veins are mainly quartz with lesser *biotite, sericite, K-feldspar, magnetite, chlorite, calcite, epidote, anhydrite and tourmaline*. Many of these minerals are also pervasive alteration products of primary igneous mineral grains.

ALTERATION MINERALOGY: Quartz, sericite, biotite, K-feldspar, albite, anhydrite/gypsum, magnetite, actinolite, chlorite, epidote, calcite, clay minerals, tourmaline. Early formed alteration can be overprinted by younger assemblages. Central and early formed potassic zones (K-feldspar and biotite) commonly coincide with ore. This alteration can be flanked in volcanic hostrocks by biotite-rich rocks that grade outward into propylitic rocks. The biotite is a fine-grained, 'shreddy' looking secondary mineral that is commonly referred to as an early developed biotite (EDB) or a 'biotite hornfels'. These older alteration assemblages in cupriferous zones can be partially to completely overprinted by later biotite and K-feldspar and then phyllic (quartz-sericite-pyrite) alteration, less commonly argillic, and rarely, in the uppermost parts of some ore deposits, advanced argillic alteration (kaolinite-pyrophyllite) .

WEATHERING: Secondary (supergene) zones carry chalcocite, covellite and other Cu*2S minerals (digenite, djurleite, etc.), chrysocolla, native copper and copper oxide, carbonate and sulphate minerals. Oxidized and leached zones at surface are marked by ferruginous 'cappings' with supergene clay minerals, limonite (goethite, hematite and jarosite) and residual quartz.

ORE CONTROLS: Igneous contacts, both internal between intrusive phases and external with wallrocks; cupolas and the uppermost, bifurcating parts of stocks, dike swarms. Breccias, mainly early formed intrusive and hydrothermal types. Zones of most intensely developed fracturing give rise to ore-grade vein stockworks, notably where there are coincident or intersecting multiple mineralized fracture sets.

ASSOCIATED DEPOSIT TYPES: Skarn Cu (K01), porphyry Au (K02), epithermal Au-Ag in low sulphidation type (H05) or epithermal Cu-Au-Ag as high-sulphidation type enargite-bearing veins (L01), replacements and stockworks; auriferous and polymetallic base metal quartz and quartz-carbonate veins (I01, I05), Au-Ag and base metal sulphide mantos and replacements in carbonate and non- carbonate rocks (M01, M04), placer Au (C01, C02).

COMMENTS: Subdivision of porphyry copper deposits can be made on the basis of metal content, mainly ratios between Cu, Mo and Au. This is a purely arbitrary, economically based criterion, an artifact of mainly metal prices and metallurgy. There are few differences in the style of mineralization between deposits although the morphology of calcalkaline deposits does provide a basis for subdivision into three distinct subtypes - the 'volcanic, classic, and plutonic' types. A fundamental contrast can be made on the compositional differences between calcalkaline quartz-bearing porphyry copper deposits and the alkalic (silica undersaturated) class. The alkalic porphyry copper deposits are described in a separate model - L03.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: Calcalkalic systems can be zoned with a cupriferous (* Mo) ore zone having a 'barren', low-grade pyritic core and surrounded by a pyritic halo with peripheral base and precious metal-bearing veins. Central zones with Cu commonly have coincident Mo, Au and Ag with possibly Bi, W, B and Sr. Peripheral enrichment in Pb, Zn, Mn, V, Sb, As, Se, Te, Co, Ba, Rb and possibly Hg is documented. Overall the deposits are large-scale repositories of sulphur, mainly in the form of metal sulphides, chiefly pyrite.

GEOPHYSICAL SIGNATURE: Ore zones, particularly those with higher Au content, can be associated with magnetite-rich rocks and are indicated by magnetic surveys. Alternatively the more intensely hydrothermally altered rocks, particularly those with quartz-pyrite-sericite (phyllic) alteration produce magnetic and resistivity lows. Pyritic haloes surrounding cupriferous rocks respond well to induced polarization (I.P.) surveys but in sulphide-poor systems the ore itself provides the only significant IP response.

OTHER EXPLORATION GUIDES: Porphyry deposits are marked by large-scale, zoned metal and alteration assemblages. Ore zones can form within certain intrusive phases and breccias or are present as vertical 'shells' or mineralized cupolas around particular intrusive bodies. Weathering can produce a pronounced vertical zonation with an oxidized, limonitic leached zone at surface (leached capping), an underlying zone with copper enrichment (supergene zone with secondary copper minerals) and at depth a zone of primary mineralization (the hypogene zone).

ECONOMIC FACTORS

TYPICAL GRADE AND TONNAGE:

- Worldwide according Cox and Singer (1988) based on their subdivision of 55 deposits into subtypes according to metal ratios, typical porphyry Cu deposits contain (median values): Porphyry Cu-Au: 160 Mt with 0.55 % Cu, 0.003 % Mo, 0.38 g/t Au and 1.7 g/t Ag. Porphyry Cu-Au-Mo: 390 Mt with 0.48 % Cu, 0.015 % Mo, 0.15 g/t Au and 1.6 g/t Ag. Porphyry Cu-Mo: 500 Mt with 0.41 % Cu, 0.016 % Mo, 0.012 g/t Au and 1.22 g/t Ag.
- A similar subdivision by Cox (1986) using a larger data base results in: Porphyry Cu: 140 Mt with 0.54 %Cu, <0.002 % Mo, <0.02g/t Au and <1 g/t Ag. Porphyry Cu-Au: 100 Mt with 0.5 %Cu, <0.002 % Mo, 0.38g/t Au and 1g/t Ag. (This includes deposits from the British Columbia alkalic porphyry class, B.C. model L03.) Porphyry Cu-Mo: 500 Mt with 0.42 % Cu, 0.016 % Mo, 0.012 g/t Au and 1.2 g/t Ag.
- British Columbia porphyry Cu * Mo ± Au deposits range from <50 to >900 Mt with commonly 0.2 to 0.5 % Cu, <0.1 to 0.6 g/t Au, and 1 to 3 g/t Ag. Mo contents are variable from negligible to 0.04 % Mo. Median values for 40 B.C. deposits with reported reserves are: 115 Mt with 0.37 % Cu, *0.01 % Mo, 0.3g /t Au and 1.3 g/t Ag.

ECONOMIC LIMITATIONS: Mine production in British Columbia is from primary (hypogene) ores. Rare exceptions are Afton mine where native copper was recovered from an oxide zone, and Gibraltar and Bell mines where incipient supergene enrichment has provided some economic benefits.

END USES: Porphyry copper deposits produce Cu and Mo concentrates, mainly for international export.

IMPORTANCE: Porphyry deposits contain the largest reserves of Cu, significant Mo resources and close to 50 % of Au reserves in British Columbia.

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[L01] [L03] [L04] [L05] [L06] [L07] [L08] [Published Profile Index]
[Deposit Profiles]

Last Updated September 11, 2007

PORPHYRY Mo (LOW-F-TYPE)

L05

by W. David Sinclair
Geological Survey of Canada, Ottawa

Sinclair, W.D.. (1995): Porphyry Mo (Low-F-type), in Selected British Columbia Mineral Deposit Profiles, Volume 1 - Metallics and Coal, Lefebure, D.V. and Ray, G.E., Editors, British Columbia Ministry of Energy of Employment and Investment, Open File 1995-20, pages 93-96.

IDENTIFICATION

SYNONYMS: Calcalkaline Mo stockwork; Granite-related Mo; Quartz-monzonite Mo.

COMMODITIES (*BYPRODUCTS*): Mo (Cu, W)

EXAMPLES (British Columbia - *Canada/International*): Endako (093K 006), Boss Mountain (093A 001), Kitsault (103P 120), Adanac (104N 052), Carmi (082ESW029), Bell Moly (103P 234), Red Bird (093E 026), Storie Moly (104P 069), Trout Lake (082KNW087); *Red Mountain (Yukon, Canada), Quartz Hill (Alaska, USA), Cannivan (Montana, USA), Thompson Creek (Idaho, USA), Compaccha (Peru), East Kounrad (Russia), Jinduicheng (China)*.

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Stockwork of molybdenite-bearing quartz veinlets and fractures in intermediate to felsic intrusive rocks and associated country rocks. Deposits are low grade but large and amenable to bulk mining methods.

TECTONIC SETTING(S): Subduction zones related to arc-continent or continent- continent collision.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: High-level to subvolcanic felsic intrusive centres; multiple stages of intrusion are common.

AGE OF MINERALIZATION: Archean (e.g. Setting Net Lake, Ontario) to Tertiary; Mesozoic and Tertiary examples are more common.

HOST/ASSOCIATED ROCK TYPES: All kinds of rocks may be hostrocks. Tuffs or other extrusive volcanic rocks may be associated with deposits related to subvolcanic intrusive rocks. Genetically related intrusive rocks range from granodiorite to granite and their fine-grained equivalents, with quartz monzonite most common: they are commonly porphyritic. The intrusive rocks are characterized by low F contents (generally <0.1 % F) compared to intrusive rocks associated with Climax-type porphyry Mo deposits.

DEPOSIT FORM: Deposits vary in shape from an inverted cup, to roughly cylindrical, to highly irregular. They are typically hundreds of metres across and range from tens to hundreds of metres in vertical extent.

TEXTURE/STRUCTURE: Ore is predominantly structurally controlled; mainly stockworks of crosscutting fractures and quartz veinlets, also veins, vein sets and breccias.

ORE MINERALOGY (Principal and *subordinate*): Molybdenite is the principal ore mineral; *chalcopyrite, scheelite, and galena are generally subordinate*.

GANGUE MINERALOGY: Quartz, pyrite, K-feldspar, biotite, sericite, clays, calcite and anhydrite.

ALTERATION MINERALOGY: Alteration mineralogy is similar to that of porphyry Cu deposits. A core zone of potassic and silicic alteration is characterized by hydrothermal K-feldspar, biotite, quartz and, in some cases, anhydrite. K-feldspar and biotite commonly occur as alteration selvages on mineralized quartz veinlets and fractures but may be pervasive in areas of intense fracturing and mineralization. Phyllic alteration typically surrounds and may be superimposed to various degrees on the potassic-silicic core; it consists mainly of quartz, sericite and carbonate. Phyllic alteration is commonly pervasive and may be extensive. Propylitic alteration consisting mainly of chlorite and epidote may extend for hundreds of metres beyond the zones of potassic-silicic and phyllic alteration. Zones of argillic alteration, where present, are characterized by clay minerals such as kaolinite and are typically overprinted on the other types of alteration; distribution of argillic alteration is typically irregular.

WEATHERING: Oxidation of pyrite produces limonitic gossans; oxidation of molybdenite produces yellow ferrimolybdite.

ORE CONTROLS: Quartz veinlet and fracture stockwork zones superimposed on intermediate to felsic intrusive rocks and surrounding country rocks; multiple stages of mineralization commonly present.

GENETIC MODEL: Magmatic-hydrothermal. Large volumes of magmatic, highly saline aqueous fluids under pressure strip Mo and other ore metals from temporally and genetically related magma. Multiple stages of brecciation related to explosive fluid pressure release from the upper parts of small intrusions result in deposition of ore and gangue minerals in crosscutting fractures, veinlets and breccias in the outer carapace of the intrusions and in associated country rocks. Incursion of meteoric water during waning stages of the magmatic-hydrothermal system may result in late alteration of the hostrocks, but does not play a significant role in the ore-forming process.

ASSOCIATED DEPOSIT TYPES: Ag-Pb-Zn veins (I05), Mo-bearing skarns (K07) may be present.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: Mo, Cu, W and F may be anomalously high in hostrocks close to and overlying mineralized zones; anomalously high levels of Pb, Zn and Ag occur in peripheral zones as much as several kilometres distant. Mo, W, F, Cu, Pb, Zn and Ag may be anomalously high in stream sediments. Mo, W and Pb may be present in heavy mineral concentrates.

GEOPHYSICAL SIGNATURE: Magnetic anomalies may reflect presence of pyrrhotite or magnetite in hornfels zones. Radiometric surveys may be used to outline anomalous K in altered and mineralized zones. Induced polarization and resistivity surveys may be used to outline high-pyrite alteration zones.

OTHER EXPLORATION GUIDES: Limonitic alteration of pyrite can result in widespread gossan zones. Yellow ferrimolybdite may be present in oxidized zones. Ag- Pb-Zn veins may be present in peripheral zones.

ECONOMIC FACTORS

GRADE AND TONNAGE: Typical size is 100 Mt at 0.1 to 0.2 % Mo. The following figures are for production plus reserves.

- Endako (B.C.): 336 Mt at 0.087 % Mo;
  Boss Mountain (B.C.): 63 Mt. at 0.074 % Mo;
  Kitsault (B.C.): 108 Mt at 0.115 % Mo;
  Lucky Ship (B.C.): 14 Mt at 0.090 % Mo;
  Adanac (B.C.): 94 Mt at 0.094 % Mo;
  Carmi (B.C.): 34 Mt at 0.091 % Mo;
  Mount Haskin (B.C.): 12 Mt at 0.090 % Mo;
  Bell Moly (B.C.): 32 Mt at 0.066 % Mo;
  Red Bird (B.C.): 34 Mt at 0.108 % Mo;
  Storie Moly (B.C.): 101 Mt at 0.078 % Mo;
  Trout Lake (B.C.): 50 Mt at 0.138 % Mo;
  Glacier Gulch (B.C.): 125 Mt at 0.151 % Mo;
  Red Mountain (Yukon): 187 Mt at 0.100 % Mo;
  Quartz Hill (Alaska): 793 Mt at 0.091 % Mo;
  Thompson Creek (Idaho): 181 Mt at 0.110 % Mo;
  Compaccha (Peru): 100 Mt at 0.072 % Mo;
  East Kounrad (Russia): 30 Mt at 0.150 % Mo.

IMPORTANCE: Porphyry Mo deposits associated with low-F felsic intrusive rocks have been an important source of world molybdenum production. Virtually all of Canada's Mo production comes from these deposits and from porphyry Cu-Mo deposits.

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February 5, 1995

[L01] [L03] [L04] [L05] [L06] [L07] [L08] [Published Profile Index]
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MINFILE Record Summary
MINFILE No 092P 131

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SUMMARY

Summary Help

Name	EPI 2	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 09' 02" N	**UTM**	10 (NAD 83)
Longitude	120° 52' 31" W	**Northing**	5668714
		Easting	648601
Commodities	Gold	**Deposit Types**	H05 : Epithermal Au-Ag: low sulphidation
Tectonic Belt	Intermontane	**Terrane**	Quesnel, Overlap Assemblage

Capsule Geology

The Epi 2 claim is located 500 metres east of the south end Vidette Lake in the Deadman Valley. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. Nicola mafic volcanic rocks are generally augite andesites, and commonly show alteration to epidote, chlorite, calcite and disseminated pyrite. Argillite layers are intercalated with the mafic volcanic rocks and are commonly silicified and brecciated (Assessment Report 16286). Silicification, carbonatization and chloritization are other alteration features common in the Nicola rocks. A zone of silicified and carbonate-altered Nicola andesite cut by veinlets of chalcedonic quartz, calcite and disseminated fine pyrite yielded an assay of 1530 ppb gold (Assessment Report 16286).

The area must have been heavily prospected during the heyday of the Vidette mine in the 1930s but there is no published record of this work. Mr. M. Dickens staked the property and prospected it in 1987 (Assessment Report 16286). It was optioned by the Canadian Nickel Company, who in 1988 completed soil geochemical surveys and geological mapping over the area (Assessment Report 17810).

Bibliography

EMPR ASS RPT *16286, *17810
GSC MEM 363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 127

File Created: 24-Jul-85 by BC Geological Survey
Last Edit: 13-Feb-01 by Ron McMillan

SUMMARY

Name	VID 27, SHELLEY	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 09' 08" N	**UTM**	10 (NAD 83)
Longitude	120° 53' 07" W	**Northing**	5668879
		Easting	647896
Commodities	Gold, Silver, Copper	**Deposit Types**	L04 : Porphyry Cu +/- Mo +/- Au
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Vid 27 occurrence is located on the east side of Vidette Lake, southeast of the Vidette mine (092P 086). The area is about 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks.

The Vid 27 occurrence is located 1500 metres southeast of the Vidette mine (092P 086). Assessment Report 4257 (page 8) states that there are a large number of prospect pits, most of which are now sloughed in. However, pyrite and chalcopyrite were noted in several spots where bedrock is visible. On the boundary between Vid #27 and Vid #28, a small pit was cut on an 8 inch (20 centimetre) quartz-carbonate vein which carries abundant pyrite and minor chalcopyrite. A selected sample from the vein assayed 0.14 ounce per ton gold (4.8 grams per tonne), 0.26 ounce per ton silver (8.9 grams per tonne) and 0.35 per cent copper (Assessment Report 4257).

The first record of work (Geological Survey of Canada Memoir 179) was in the 1930s on the Shelley property (092P 088) when the property was explored by several pits and an adit. More recently the property has been covered by several soil geochemical and geophysical surveys (Assessment Reports 4257, 12021, 17810, 18492, 19136).

Bibliography

EMPR AR 1934-F22
EMPR ASS RPT *4257, 12021, 17810, 18492, 19136
GSC MEM *179, p. 35; 363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 126

File Created: 24-Jul-85 by BC Geological Survey
Last Edit: 13-Feb-01 by Ron McMillan

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SUMMARY

Summary Help

Name	VID 4	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 10' 08" N	**UTM**	10 (NAD 83)
Longitude	120° 53' 20" W	**Northing**	5670725
		Easting	647590
Commodities	Molybdenum	**Deposit Types**	L05 : Porphyry Mo (Low F- type)
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Vid 4 occurrence is located on the east side of Vidette Lake, about 1 kilometre east of the Vidette mine (092P 086). The area is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks.

The Vid 4 occurrence is located 1000 metres east of the Vidette mine (092P 086). Assessment Report 4257 (page 9) states that "molybdenite was noted in two places on the Vid #4 claim. Near the mutual boundary of Vid #3 and Vid #4, two long trenches have been cut in greenstone. Traces of fine-grained molybdenite were found in a narrow quartz vein in one of these trenches. About 700 feet (225 metres) northeast of these trenches, disseminated flakes of molybdenite are found in two narrow quartz veins in a slightly porphyritic granodiorite".

The first record of work (Geological Survey of Canada Memoir 179) was in the 1930s on the Shelley property (092P 088) when the property was explored by several pits and an adit. More recently the property has been covered by several soil geochemical and geophysical surveys (Assessment Reports 4257, 12021, 17810, 18492, 19136).

Bibliography

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GSC MEM *179, p. 35; 363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 088

XML Extract

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SUMMARY

Summary Help

Name	SHELLEY, MISSING LINK, COVER	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 09' 40" N	**UTM**	10 (NAD 83)
Longitude	120° 53' 11" W	**Northing**	5669865
		Easting	647790
Commodities	Gold	**Deposit Types**	I01 : Au-quartz veins
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Shelley group of claims, which included the Cover and Missing Link claims, were located on the east side of Vidette Lake, southeast of the Vidette mine (092P 086). They have all lapsed. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway about 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however, contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks.

The Shelley claims are located 1500 metres southeast of the Vidette mine (092P 086). Geological Survey of Canada Memoir 179 describes two "shear zones" carrying abundant disseminated pyrite in greenstone and approximately 3 metres apart. Elsewhere, a short adit has been driven on narrow quartz and calcite stringers in a "shear zone" in greenstone.

The first record of work was in the 1930s when the property was explored by several pits and an adit. More recently the property has been covered by several soil geochemical and geophysical surveys (Assessment Reports 4257, 12021, 17810, 18492, 19136).

Bibliography

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EMPR ASS RPT *4257, 12021, 17810, 18492, 19136
GSC MEM *179, p. 35; 363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 087

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SUMMARY

Summary Help

Name	SAVONA GOLD, LAST CHANCE, VID	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 10' 25" N	**UTM**	10 (NAD 83)
Longitude	120° 54' 46" W	**Northing**	5671202
		Easting	645905
Commodities	Gold, Silver, Lead	**Deposit Types**	H05 : Epithermal Au-Ag: low sulphidation I01 : Au-quartz veins
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Savona gold mine is located at the north end of Vidette Lake, north of the Vidette mine (092P 086) in Hamilton Creek valley. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however, contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks. Feldspar porphyry dikes are common at the Savona mine.

The Savona mine is located 800 metres north of the Vidette mine and along the same general trend. Three northwest striking, east-dipping veins (Sylvanite, Jarvi and Argentite) have been documented (Geological Survey of Canada Memoir 179). The veins are composed mainly of quartz and carbonate with minor pyrite and galena and rarely reach 60 centimetres in thickness.

The first record of work was in the 1930s when the property was explored by several pits, short adits and diamond drilling. In 1983, some of the underground workings were rehabilitated and washed, and nine samples taken in an underground sampling program (Assessment Report 12670). The highest assay was 0.9 gram per tonne gold and 2.1 grams per tonne silver in a calcite vein. A soil geochemical program (38 samples) was also undertaken (Assessment Report 12670).

Bibliography

EMPR AR 1933-182; 1934-F21; *1936-F36,F41; 1940-60
EMPR ASS RPT 4257, 8955, 10103, 11731, *12670, 15536, 18641
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EMPR GEM 1973
EMPR PF (Workings plan, 1936; Savona Gold Mines Ltd. Prospectus; 092P General File - Unpub. report by Campbell, pp. 150,151)
GSC MEM *179, p. 34; 363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 086

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SUMMARY

Summary Help

Name	VIDETTE, SEARCHER NO.1 (L.4744), SEARCHER NO.2 FR. (L.4742), SEARCHER NO. 6 (L.4743), SEARCHER NO. 5 (L.4739), SEARCHER NO. 2 (L.4755), SEARCHER NO. 4 (L.4756), SEARCHER NO. 3 (L.4745), EB FR. (L.4760), WHITE PASS (L.4741), MONARCH (L.4754), TENFORD, BROKEN RIDGE, BLUFF, DEXHEIMER	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Past Producer	**NTS Map**	092P02W
Latitude	51° 10' 00" N	**UTM**	10 (NAD 83)
Longitude	120° 54' 17" W	**Northing**	5670446
		Easting	646490
Commodities	Gold, Silver, Copper, Lead	**Deposit Types**	H05 : Epithermal Au-Ag: low sulphidation I01 : Au-quartz veins
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Vidette gold mine is located at the north end of Vidette Lake, in the Deadman Valley. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona. Crown-granted Lots 4744 and 4740 forfeited May 1992.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks.

The Vidette mine features several narrow north-northwest striking quartz veins which dip between 45 and 70 degrees northeast (Geological Survey of Canada Memoir 179). The veins average slightly less than 30 centimetres in width, however, where they were economic they averaged 38 centimetres in width. Mineralization consists of quartz and pyrite, with some chalcopyrite and rarely tellurides. The veins are commonly ribboned with graphite seams. Wallrocks are heavily altered to ankeritic carbonate and pyrite. Five vein systems have been developed at the mine: the Tenford, Bluff, Broken Ridge, 70 and Dexheimer. The strongest, the Tenford, was followed for 275 metres on the first level and made ore over a length of 150 metres (Assessment Report 11731).

The veins were known to prospectors as early as 1898. However, active development did not take place until 1931, and following 335 metres of underground exploration and development, the mine was put into production in 1933. Between 1933 and May 1939, underground development and exploration included 199 metres of three compartment inclined shaft, 289 metres of winzes, 4984

metres of drifts and crosscuts and 1478 metres of raises (Assessment Report 11731). The mine milled a total of 48,980 tonnes of ore, recovering 1449 kilograms of silver, 929 kilograms of gold, 43,825 kilograms of copper and 161 kilograms of lead. The Dexheimer vein, located at the soutwest side of the lake, was originally explored by two short adits. During 1939-40, a tunnel was driven under the lake from the main workings and a small amount of drifting and raising done on the zone. In 1983, Consolidated Paymaster Resources Limited completed three NQ diamond-drill holes totalling 1017 metres (Assessment Report 11731). In 1984, Tugold Resources Incorporated (Assessment Report 13453) completed a program of geophysical surveying (magnetometer and VLF-EM), soil geochemical surveying (203 samples) and geological evaluation. In 1995, Discovery Consultants (Assessment Report 24060) completed a program of soil geochemical surveying (35 samples), heavy mineral stream sediment analyses (3 samples) and lithogeochemistry (11 samples).

Probable reserves remaining in the old workings in the Bluff and Dexheimer veins were estimated to total 10,160 tonnes grading 19.1 grams per tonne gold and 29.8 grams per tonne silver (Assessment Report 13453). Production between 1933 and 1940 totalled 49,980 tonnes, from which 1449 kilograms of silver, 929 kilograms of gold and 43.8 tonnes of copper were recovered.

Bibliography

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EMPR BULL 20, part IV, p. 38
EMPR ASS RPT 4257, 7164, 10103, 10240, *11731, 12670, *13453, 15536, 18641, 24060
EMPR PF (Underground mine plans, geological maps, photographs; Prospectus, Booker Gold Explorations Limited, 1987; Claim location map; see Adelphi, 082LSW052 - Prospectus, Keda Resources Limited, 1977; 092P General File - Unpub. report by Campbell, pp. 150,151)
EMPR EXPL 1979-197; 1983-358; 1984-255
EMPR METAL MM00264
EMPR MINE FICHE #61749-#61751 (Plans and section of 3 level, composite surface and underground plans)
GSC MEM *179, pp. 26-34; 363, p. 87
GSC MAP 1966-3; 2390; 1278A
GSC ECON GEOL 15, p. 19
EMR MP CORPFILE (Vidette Gold Mines, Limited; Glen Copper Mines Limited; Hobo Creek Coppermines Ltd.; Tugold Resources Inc.)
EMR MIN BILL MR 223 B.C. 196
CANMET IR 728 (1931), pp. 103-107; 744 (1933), pp. 145-148
GCNL #48, 1981; #136,#148,#153, 1983; #20, 1986
MIN REV MAG Vol.3 No.5 Sept/Oct, 1983
The Miner June 1934, pp. 237,238 (The Vidette Mine and Mill); Dec. 1937, pp. 24-27 (Milling at the Vidette Mine)
NW PROSP Winter 1985, p. 10

MINFILE Record Summary
MINFILE No 092P 085

XML Extract/Inventory Report

Print Preview PDF -- SELECT REPORT -- New Window

File Created: 24-Jul-85 by BC Geological Survey
Last Edit: 14-Feb-01 by Ron McMillan

SUMMARY

Summary Help

Name	HAMILTON CREEK, DET	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Prospect	**NTS Map**	092P02W
Latitude	51° 10' 22" N	**UTM**	10 (NAD 83)
Longitude	120° 55' 02" W	**Northing**	5671101
		Easting	645597
Commodities	Gold, Silver	**Deposit Types**	H05 : Epithermal Au-Ag: low sulphidation I01 : Au-quartz veins
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Hamilton Creek gold mine is located at the north end of Vidette Lake, north of the Vidette mine (092P 086) on the west side of Hamilton Creek valley. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of Upper Triassic Nicola Group exposed in a window eroded through flat-lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest-trending Miocene channel. The Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally augite andesites commonly altered to chlorite-rich or calcareous greenstones, however contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks.

The Hamilton Creek mine is located 900 metres northwest of the Vidette mine and along strike from the Tenford vein (092P 086). One or more northwest striking, east-dipping veins have been documented (Geological Survey of Canada Memoir 179). The veins are composed mainly of quartz and carbonate with minor pyrite rarely reach 30 centimetres in thickness. A sample taken along a 6 metre length of vein which ranged from 2 to 9 centimetres in thickness assayed 49 grams per tonne gold and 130 grams per tonne silver (Minister of Mines Special Report 17, 1936).

The first record of work was in the 1930s (Geological Survey of Canada Memoir 179; Minister of Mines Special Report 17, 1936) when the property was explored by several pits, three short adits and diamond drilling. In 1983, some of the underground workings were rehabilitated and washed, and nine samples taken in an underground sampling program (Assessment Report 12670). The highest assay was 0.9 gram per tonne gold and 3.1 grams per tonne silver in a quartz vein. A soil geochemical program (38 samples) was also undertaken (Assessment Report 12670).

Bibliography

EMPR AR 1934-F22; 1935-F57; *1936-F41; 1940-60
EMPR ASS RPT 4257, 12670
EMPR GEM 1973-270
EMPR Special Report *17, 1936
EMPR PF (Claim and location maps; 092P General File - Unpub. report by Campbell, pp. 150,151)
GSC MAP 1278A; 1966-3
GSC MEM 179, pp. 34,363

MINFILE Record Summary
MINFILE No 092P 024

XML Extract/Inventory Report

Print Preview PDF -- SELECT REPORT -- New Window

File Created: 08-Feb-01 by Ron McMillan
Last Edit: 08-Feb-01 by Ron McMillan

SUMMARY

Summary Help

Name	GNOME, EPI, YARD, VIDETTE #1, GALA, VID	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 09' 26" N	**UTM**	10 (NAD 83)
Longitude	120° 52' 38" W	**Northing**	5669451
		Easting	648443
Commodities	Gold, Molybdenum, Copper	**Deposit Types**	T02 : Geothermal spring H05 : Epithermal Au-Ag: low sulphidation L08 : Porphyry Mo (Climax-type) L04 : Porphyry Cu +/- Mo +/- Au
Tectonic Belt	Intermontane	**Terrane**	Quesnel, Overlap Assemblage

Capsule Geology

The Gnome property is located 2 kilometres east of the Vidette mine (092P 086), northeast of Vidette Lake in the Deadman Valley. The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain by mafic volcanic rocks of the Upper Triassic Nicola Group exposed in a window eroded through flat lying Miocene sedimentary rocks and plateau basalts of the Chilcotin Group. The uppermost Chilcotin Group strata comprise an extensive layer of plateau basalts of the Chasm Formation, underlain by volcanic ash and fluviatile and lacustrine sedimentary strata of the Deadman River Formation which occupy a northwest trending Miocene channel. In the southern parts of the Yard claims and the Gnome claim, the Nicola rocks are intruded by biotite-hornblende granodiorite plugs which are possibly related to the Triassic to Jurassic Thuya batholith. Nicola rocks are generally chlorite-rich or calcareous greenstones, however, contact metamorphism has developed garnet-diopside-actinolite skarn or tactite adjacent to the intrusive rocks. Locally a siliceous cap is developed near the paleosurface within and overlying the Nicola rocks. The siliceous caprocks are varicoloured (white, red, buff, brown) and consist of cryptocrystalline massive and banded to vuggy silica. Some silica occurs as crosscutting veins within Nicola rocks, other thin delicately-layered material is interpreted as hot spring sinter (Assessment Report 17810). Carbonatization and chloritization are other alteration features common in the Nicola rocks.

Diamond drilling by Inco resulted in an intersection grading 739 ppb gold across 18 centimetres of calcsilicate skarn cut by a 2 centimetre black to colourless chalcedonic quartz veinlet within Nicola Group rocks (Assessment Report 19136) on the Yard claims. On the Gnome claim an intersection of 4650 ppb gold across 0.55 metre was obtained in fine grained Nicola tuff cut by a multitude of calcite and quartz veinlets with up to 35 per cent disseminated pyrite (Assessment Report 18492). Earlier work by Keda Resources Limited (Assessment Report 4257) identified molybdenite and chalcopyrite mineralization in a porphyry-style environment.

The Gnome property was staked as the VID group of claims in 1972 by Keda Resources Limited (Assessment Report 4257), who completed a soil geochemical survey (355 samples). Cominco Limited staked the property as a molybdenum prospect in 1981, and completed widely-spaced reconnaissance magnetic and induced polarization surveys on what was then called the Gala property (Assessment Report 9223). Chevron Canada Resources Limited re-staked the property as the Gnome claim and undertook magnetometer surveys, soil and silt geochemical surveys (377 samples) and

lithogeochemical surveys (59 samples) during an exploration program for molybdenum in 1983 (Assessment Report 12021). Noranda Exploration Company completed a single NQ diamond-drill hole (312.4 metres) in 1986 under an option agreement with Chevron. The Canadian Nickel Company optioned the Gnome claim from Chevron and completed a program of geological mapping, lithogeochemistry (17 samples), soil geochemical sampling (933 samples) and diamond drilling (825 metres in 2 holes) in 1988 (Assessment Report 18492). Mr. M. Dickens staked the adjoining EPI group and optioned the claims to the Canadian Nickel Company, who in 1988 (Assessment Report 17810) completed a program of geological mapping, soil geochemical surveying (961 samples) and lithogeochemistry (17 samples). In 1989, Inco (Assessment Report 19136) completed 5 diamond-drill holes (1140 metres) on the Yard 1 and 2 claims (EPI group) immediately to the north of the Gnome claim. In 1995, Queenstake Resources Limited completed a three hole diamond drill program totalling 610 metres (Assessment Report 23971).

Bibliography

EMPR ASS RPT *4257, 9223, 12946, 14569, 15120, *17810, *18492, *19136, 23971
GSC MEM *179; *363
GSC MAP 1278A

MINFILE Record Summary
MINFILE No 092P 146

XML Extract/Inventory Report

Print Preview PDF -- SELECT REPORT -- New Window

File Created: 07-Feb-01 by Ron McMillan
Last Edit: 27-Mar-01 by Ron McMillan

SUMMARY

Summary Help

Name	CLINTON	**Mining Division**	Clinton
		BCGS Map	092P016
Status	Showing	**NTS Map**	092P02W
Latitude	51° 09' 20" N	**UTM**	10 (NAD 83)
Longitude	120° 53' 50" W	**Northing**	5669226
		Easting	647050
Commodities	Gold, Copper	**Deposit Types**	H05 : Epithermal Au-Ag: low sulphidation I : VEIN, BRECCIA AND STOCKWORK I01 : Au-quartz veins
Tectonic Belt	Intermontane	**Terrane**	Quesnel

Capsule Geology

The Clinton prospect is located on the west side of Vidette Lake south of the Vidette mine property (092P 086). The area is approximately 50 (air) kilometres north of Savona and is accessible on a good-quality gravel road which leads north from the Trans-Canada Highway approximately 7.4 kilometres west of Savona.

The Vidette Lake area is underlain mainly by plateau basalts of the Miocene Chasm Formation (Chilcotin Group). In the Deadman River-Vidette Lake area, these basalts are eroded and Upper Triassic Nicola Group volcanic, sedimentary and related intrusive rocks (mainly dikes and plugs of feldspar porphyry) are exposed in a window. Nicola Group rocks on the Clinton claims are mainly augite andesite and volcanic breccia (Assessment Reports 11854 and 17179) intruded by porphyritic monzonite dikes with plagioclase phenocrysts. The Nicola and dike rocks have been moderately to intensely propylitized and pyritized with up to 7 per cent pyrite. Chalcopyrite and malachite occur as minor constituents in fractures. Steeply dipping quartz veins up to 20 centimetres in width trend northwest, some containing pyrite. The highest assay was 4375 ppb gold across 0.3 metre in drillhole 87-3 (Assessment Report 17179).

There is no record of the early history of the property which lies southwest of the past-producing Vidette mine property. The Clinton claims were staked in 1982 by Mr. C. Boitard. They were optioned to Lakewood Mining Company who completed an induced polarization survey (6.0 kilometres) and soil (475 samples) and lithogeochemical (13 samples) surveys (Assessment Report 10893). In 1984 (Assessment Report 11854), Lakewood completed 8 kilometres of road construction and four diamond-drill holes (468 metres). In 1987, an additional three holes (686 metres) were completed on the property (Assessment Report 17179). In 1990, prospecting and 1.8 kilometres of induced polarization surveying were carried out (Assessment Reports 21184, 22235, 22728).

Bibliography

EMPR ASS RPT 10893, *11854, *17179, 21184, 22235, 22728
EMPR AR 1936-36-43; 1939-41,42,74; 1940-27,60
GSC MEM 179, pp. 26-34; *363
GSC MAP 1278A

Appendix 2
Tantalis GATOR
Search Reports

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5986290

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5986290			DISTRICT LOT 4764, BEING C.E. FRACTION MINERAL CLAIM, LILLOOET DISTRICT	.3	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5986290	19416			Reversion	U	03-Nov-1947		Absolute	0
5986290	98688	0120189	5234/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	.26

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Interest Details

Search Criteria: Effective DATE: 01/01/1936, Tenure History: On

DISTRICT LOT 4762, BEING T.F. FRACTION MINERAL CLAIM, LILLOOET DISTRICT (Legal Desc populated from related PIN(s))

Images

Crown GRANT: View Image(s)

MrSID Plug-in **Off** Enable

TIF Viewer **Off** Enable

Interest Information

File #:	0000000	**Type:**	Crown Grant
Document #:	6633/637	**Subtype:**	Pre-Tantalis Crown Grant
OIC/Ministry Order #:		**Purpose:**	Pre-Tantalis
Status:	Active	**Subpurpose:**	Pre-Tantalis
Status Reason:	Disposition In Good Standing	**Region:**	Pre-Tantalis
Area (Ha) / Method:	16.61 / Calculated Automatically	**Location:**	Unknown
Received Date:	11-Nov-1111		
Effective Date:	01-Jan-1936		
Expiry Date:			

Crown Grant Covenants

Timber Value:

Timber Deferment: Unknown

Surface/Under: Surface

Resources:

Restrictions:

Interest Holders

Land Controls

Administrative Areas

Indian Reserve:
Ecological Reserve:
Provincial Park:
National Park:

Agricultural Land Reserve:
Assessment Area: Kamloops
Electoral District: Kamloops
Land District: Lillooet District
Land Management Region: Thompson-Okanagan
Land Title District: Kamloops
Municipality: Unknown
Regional District: Thompson-Nicola
School District:

Primary Survey Parcels

Tantalis ID: 45478

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5986160

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5986160			DISTRICT LOT 4762, BEING T.F. FRACTION MINERAL CLAIM, LILLOOET DISTRICT	16.6	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5986160	19415			Reversion	U	03-Nov-1947		Absolute	0
5986160	45478	0000000	6633/637	Crown Grant	S	01-Jan-1936	UNKNOWN	Active	16.61
5986160	99323	0123601	6131/632	Crown Grant	U	13-Dec-1935	DEADMAN'S CREEK	Inactive	16.62

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5986030

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5986030			DISTRICT LOT 4760, BEING E.B. FRACTION MINERAL CLAIM, LILLOOET DISTRICT	5	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5986030	19414			Reversion	U	03-Nov-1947		Absolute	0
5986030	98687	0120188	5233/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	4.96

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985960

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985960			DISTRICT LOT 4756, BEING SEARCHER NO. 4 MINERAL CLAIM, LILLOOET DISTRICT	14.8	Active	18-Feb-1937	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985960	19413			Reversion	U	03-Nov-1947		Absolute	0
5985960	100349	0128355	7877/649	Crown Grant	U	03-Aug-1937	DEADMAN'S CREEK	Inactive	14.78

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985830

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985830			DISTRICT LOT 4755, BEING SEARCHER NO. 2 MINERAL CLAIM, LILLOOET DISTRICT	19	Active	18-Feb-1937	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985830	19412			Reversion	U	03-Nov-1947		Absolute	0
5985830	100348	0128354	7876/649	Crown Grant	U	03-Aug-1937	DEADMAN'S RIVER	Inactive	19.02

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985700

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985700			DISTRICT LOT 4754, BEING MONARCH MINERAL CLAIM, LILLOOET DISTRICT	14.9	Active	18-Feb-1937	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985700	19411			Reversion	U	03-Nov-1947		Absolute	0
5985700	100347	0128353	7875/649	Crown Grant	U	03-Aug-1937	DEADMAN'S RIVER	Inactive	14.86

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985670

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985670			DISTRICT LOT 4751, BEING NEW HOPE MINERAL CLAIM, LILLOOET DISTRICT	19.9	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985670	19410			Reversion	U	03-Nov-1947		Absolute	0
5985670	98686	0120187	5232/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	19.92

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985540

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985540			DISTRICT LOT 4748, BEING VALLEY NO. 2 MINERAL CLAIM, LILLOOET DISTRICT	2	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985540	19409			Reversion	U	03-Nov-1947		Absolute	0
5985540	98685	0120186	5231/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	1.97

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985410

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985410			DISTRICT LOT 4747, BEING VALLEY NO. 1 MINERAL CLAIM, LILLOOET DISTRICT	6	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985410	19408			Reversion	U	03-Nov-1947		Absolute	0
5985410	98684	0120185	5230/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	6

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985380

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985380			DISTRICT LOT 4746, BEING PIONEER MINERAL CLAIM, LILLOOET DISTRICT	20.9	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985380	19407			Reversion	U	03-Nov-1947		Absolute	0
5985380	45472	0000000	6632/637	Crown Grant	S	01-Jan-1936	UNKNOWN	Active	20.9
5985380	98683	0120184	5229/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	20.9

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985250

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985250			DISTRICT LOT 4745, BEING SEARCHER NO. 3 MINERAL CLAIM, LILLOOET DISTRICT	15.2	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985250	19406			Reversion	U	03-Nov-1947		Absolute	0
5985250	98682	0120183	5228/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	15.16

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Interest Details

Search Criteria: Effective DATE: 01/01/1936, Tenure History: On

DISTRICT LOT 4744, BEING SEARCHER NO. 1 MINERAL CLAIM, LILLOOET DISTRICT (Legal Desc populated from related PIN(s))

Images

Crown GRANT: View Image(s)

MrSID Plug-in **Off** Enable

TIF Viewer **Off** Enable

Interest Information

File #:	0000000	**Type:**	Crown Grant
Document #:	6631/637	**Subtype:**	Pre-Tantalis Crown Grant
OIC/Ministry Order #:		**Purpose:**	Pre-Tantalis
Status:	Active	**Subpurpose:**	Pre-Tantalis
Status Reason:	Disposition In Good Standing	**Region:**	Pre-Tantalis
Area (Ha) / Method:	18.13 / Calculated Automatically	**Location:**	Unknown
Received Date:	11-Nov-1111		
Effective Date:	01-Jan-1936		
Expiry Date:			

Crown Grant Covenants

Timber Value:

Timber Deferment: Unknown

Surface/Under: Surface

Resources:

Restrictions:

Interest Holders

Land Controls

Administrative Areas

Indian Reserve:	
Ecological Reserve:	
Provincial Park:	
National Park:	

Agricultural Land Reserve:	
Assessment Area:	Kamloops
Electoral District:	Kamloops
Land District:	Lillooet District
Land Management Region:	Thompson-Okanagan
Land Title District:	Kamloops
Municipality:	Unknown
Regional District:	Thompson-Nicola
School District:	

Primary Survey Parcels

Tantalis ID: 45466

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985120

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985120			DISTRICT LOT 4744, BEING SEARCHER NO. 1 MINERAL CLAIM, LILLOOET DISTRICT	18.1	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985120	19403			Reversion	U	05-Feb-1992		Absolute	0
5985120	98679	0120180	3676/907	Crown Grant	U	22-Sep-1953	DEADMAN'S RIVER	Inactive	18.13
5985120	19404			Reversion	U	03-Nov-1947		Absolute	0
5985120	45466	0000000	6631/637	Crown Grant	S	01-Jan-1936	UNKNOWN	Active	18.13
5985120	98680	0120180	5227/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	18.13

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5985090

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5985090			DISTRICT LOT 4743, BEING SEARCHER NO. 6 MINERAL CLAIM, LILLOOET DISTRICT	13.7	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5985090	19402			Reversion	U	03-Nov-1947		Absolute	0
5985090	98678	0120179	5226/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	18.72

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5984920

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5984920			DISTRICT LOT 4742, BEING SEARCHER NO. 2 FRACTION MINERAL CLAIM, LILLOOET DISTRICT.	1.5	Active	18-Feb-1937	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5984920	19399			Reversion	U	03-Nov-1947		Absolute	0
5984920	100345	0128351	7874/649	Crown Grant	U	03-Aug-1937	DEADMAN'S RIVER	Inactive	1.51

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5984890

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5984890			DISTRICT LOT 4741, BEING WHITE PASS MINERAL CLAIM, LILLOOET DISTRICT	10.4	Active	18-Feb-1937	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5984890	19398			Reversion	U	05-Nov-1956		Absolute	0
5984890	100346	0128352	7873/649	Crown Grant	Unknown	03-Aug-1937	DEADMAN'S RIVER	Inactive	10.41

BRITISH COLUMBIA

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Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5984760

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5984760			DISTRICT LOT 4740, BEING SEARCHER NO. 1 FRACTION MINERAL CLAIM, LILLOOET DISTRICT	7	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5984760	19396			Reversion	U	05-Feb-1992		Absolute	0
5984760	24941	0000000	3677/907	Crown Grant	U	22-Sep-1953	UNKNOWN	Inactive	6.98
5984760	19397			Reversion	U	03-Nov-1947		Absolute	0
5984760	97663	0115757	5225/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	6.98

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Interest Details

Search Criteria: Effective DATE: 08/06/1980, Tenure History: On

All that unsurveyed Crown land in the vicinity of District Lot 4739, together with that part of District Lot 4739, Lillooet District, surveyed as the "Searcher No. 5" mineral claim, and containing 3.6 hectares, more or less

Images

Crown GRANT: No Images Available

MrSID Plug-in **Off** Enable

TIF Viewer **Off** Enable

Interest Information

File #:	3400031	**Type:**	Reserve/Notation
Document #:	80343	**Subtype:**	Map Reserve
OIC/Ministry Order #:		**Purpose:**	Environment, Conservation, & Recr
Status:	Active	**Subpurpose:**	Urep/Recreation Reserve
Status Reason:	Disposition In Good Standing	**Region:**	Si - Land Mgmnt - Southern Service Region
Area (Ha) / Method:	3.6 / Converted	**Location:**	Vidette Lake
Received Date:	11-Nov-1111		
Effective Date:	06-Aug-1980		
Expiry Date:	31-Dec-9999		

Crown Grant Covenants

Timber Value:

Timber Deferment: Unknown

Surface/Under: Surface

Resources:

Restrictions:

Interest Holders

MINISTRY OF FORESTS AND RANGE

Land Controls

Administrative Areas

Indian Reserve:	
Ecological Reserve:	
Provincial Park:	
National Park:	

Agricultural Land Reserve:	
Assessment Area:	Kamloops
Electoral District:	Kamloops
Land District:	Lillooet District
Land Management Region:	Thompson-Okanagan
Land Title District:	Kamloops
Municipality:	Unknown
Regional District:	Thompson-Nicola
School District:	

Primary Survey Parcels

Tantalis ID: 194135

BRITISH COLUMBIA

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Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5984630

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5984630			DISTRICT LOT 4739, BEING SEARCHER NO. 5 MINERAL CLAIM, LILLOOET DISTRICT	7.3	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5984630	194135	3400031	80343	Reserve/Notation		06-Aug-1980	VIDETTE LAKE	Active	3.6
5984630	19395			Reversion	U	03-Nov-1947		Absolute	0
5984630	98677	0120178	5224/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	7.32

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B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 5986320

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
5986320			DISTRICT LOT 4766, BEING ARGENTIA NO. 1 MINERAL CLAIM, LILLOOET DISTRICT	13.4	Active	26-Jul-1934	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
5986320	19417			Reversion	U	03-Nov-1947		Absolute	0
5986320	98689	0120190	5235/623	Crown Grant	U	26-Mar-1935	DEADMAN'S RIVER	Inactive	14

BRITISH COLUMBIA

B.C. Home

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Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10478250

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10478250			DISTRICT LOT 4753, BEING MONUMENT MINERAL CLAIM, LILLOOET DISTRICT	15.5	Inactive		

BRITISH COLUMBIA

B.C. Home

Logged On As: (jhoule) of "".

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Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10478120

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10478120			DISTRICT LOT 4752, BEING SEARCHER NO. 8 MINERAL CLAIM, LILLOOET DISTRICT	16.4	Inactive		

BRITISH COLUMBIA

B.C. Home

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Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10478090

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10478090			DISTRICT LOT 4750, BEING SEARCHER NO. 7 MINERAL CLAIM, LILLOOET DISTRICT	2.9	Inactive		

BRITISH COLUMBIA

B.C. Home

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Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10477920

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10477920			DISTRICT LOT 4749, BEING COMSTOCK MINERAL CLAIM, LILLOOET DISTRICT	10.6	Inactive		

BRITISH COLUMBIA

B.C. Home

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Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10477180

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10477180			DISTRICT LOT 7209, BEING GOLDEN GATE NO. 1 MINERAL CLAIM, LILLOOET DISTRICT	19.6	Inactive		

BRITISH COLUMBIA

B.C. Home

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Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10477050

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10477050			DISTRICT LOT 4759, BEING A E FRACTION MINERAL CLAIM, LILLOOET DISTRICT	4.4	Inactive		

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B.C. Home

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Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10476980

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10476980			DISTRICT LOT 4758, BEING THOMAS PAINE MINERAL CLAIM, LILLOOET DISTRICT	20.1	Inactive		

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10476850

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10476850			DISTRICT LOT 4757, BEING WOBBLY MINERAL CLAIM, LILLOOET DISTRICT	12.1	Inactive		

BRITISH COLUMBIA

B.C. Home

Logged On As: (jhoule) of "".

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Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10341840

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10341840			DISTRICT LOT 7205, BEING LONE SHOE FRACTION MINERAL CLAIM, LILLOOET DISTRICT	11.2	Inactive		

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10341710

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10341710			DISTRICT LOT 7204, BEING ROCKY MINERAL CLAIM, LILLOOET DISTRICT	17.3	Inactive		

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10341680

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10341680			DISTRICT LOT 7203, BEING LAST CHANCE MINERAL CLAIM, LILLOOET DISTRICT	20.5	Inactive		

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

Back to Main Search Menu

Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 6240330

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
6240330			DISTRICT LOT 8343, LILLOOET DISTRICT	7.3	Active	10-May-1962	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
6240330	38891	0000000	5462/1025	Crown Grant	Unknown	01-Jan-1962	UNKNOWN	Active	7.24

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 6152010

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
6152010			DISTRICT LOT 947, LILLOOET DISTRICT	259	Active	12-Sep-1907	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
6152010	14415	0000000	2337/209	Crown Grant	Unknown	01-Jan-1907	UNKNOWN	Active	259.08

BRITISH COLUMBIA

B.C. Home Logged On As: (jhoule) of "". LOGOFF

Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 6024660

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
6024660			DISTRICT LOT 5884, LILLOOET DISTRICT	2.5	Active	15-Jan-1953	

Interest Summary

PIN	Tantalis ID	File #	Document #	Interest	Sur/Under	Effective Date	Location	Status	Area (Ha)
6024660	19828	0000000	2984/900	Crown Grant	Unknown	01-Jan-1953	UNKNOWN	Active	2.46

BRITISH COLUMBIA

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Tantalis GATOR

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Query Results: Consolidated Parcel Encumbrance Report

Date Created: 06-Feb-2008
Created By: GATOR
Pin Id: 10478380

Tenure History: On Enable Disable

Primary Parcel

PIN	Subdiv	RoW	Legal Description	Area (Ha)	Status	Confirmed	LT Office
10478380			DISTRICT LOT 4765, LILLOOET DISTRICT	11.2	Inactive		

Appendix 3
G.P.S., Rock Sample Location, Description and Geochemistry Tables

2008 GPS Locations for Vidette Lake Project

Waypoint	Date	Taken By	Property	Location	Details	UTM Zone	Easting	Northing	Elevation
Vidette Resort	01-Apr-08	J. Houle	Vidette	Vidette Mine Resort	Deck of former Mine Manager's House	10N	646429	5670391	902
Vidette Plant?	01-Apr-08	J. Houle	Vidette	Vidette Mine concrete workings north shore Vidette Lake	Possible Mill Site	10N	646320	5670355	898
Vidette Middle Adit?	01-Apr-08	J. Houle	Vidette	Vidette Mine Main Shaft Collar	Caved possible Main Shaft collar	10N	646256	5670458	929
Vidette Raise Vein	01-Apr-08	J. Houle	Vidette	Vidette Mine Tenford Vein breakthrough at surface	Site of samples 813256, 813257	10N	646202	5670521	908
Vidette North Adit	01-Apr-08	J. Houle	Vidette	Vidette Mine North Adit Portal No. 1 Level	Access to site of samples 813251-813255	10N	646115	5670687	879
Vidette Mine Shaft?	01-Apr-08	J. Houle	Vidette	Vidette Mine Bluff Vein Raise/Adit breakthrough along road	Along ridge above road north of mine site	10N	646403	5670575	966
Vidette Road W. Spu	01-Apr-08	J. Houle	Vidette	Turnoff to west spur road from Vidette Mine Road	Possible turnoff to west side of Vidette Lake Valley	10N	647059	5655035	796

2008 Rock Sample Locations for Vidette Lake Project

Sample #	Date	Sampler	Property	Location	Details	UTM Zone	Easting	Northing	Elevation
813251	01-Apr-08	J. Houle	Vidette	south end No.1 Level Tenford Vein splay before cave - 0.75 to 0.85 m. from east wall	0.1 m. thick quartz-sulphide vein @ 350/65	10N	646155	5670632	879
813252	01-Apr-08	J. Houle	Vidette	south end No.1 Level Tenford Vein splay before cave - 0.85 to 3.35 m. from east wall	mafic volcanics sheared between veins	10N	646153	5670632	879
813253	01-Apr-08	J. Houle	Vidette	south end No.1 Level Tenford Vein splay before cave - 3.35 to 3.4 m. from east wall	0.05 m. thick quartz-sulphide vein @ 350/80	10N	6461152	5670632	879
813254	01-Apr-08	J. Houle	Vidette	south end No.1 Level Tenford Vein splay before cave - 3.4 to 4.65 m. from east wall	mafic volcanics sheared between veins	10N	646151	5670632	879
813255	01-Apr-08	J. Houle	Vidette	south end No.1 Level Tenford Vein splay before cave - 4.6 to 4.65 m. from east wall; 1.35 to 1.4 m. from west	0.05 m. thick quartz-sulphide vein @ 350/60	10N	646150	5670632	879
813256	01-Apr-08	J. Houle	Vidette	Vidette Mine 128 Raise breakthrough at surface south rib Tenford Vein	0.25 m. thick quartz-sulphide vein @ 320/45	10N	646202	5670521	907
813257	01-Apr-08	J. Houle	Vidette	Vidette Mine 128 Raise breakthrough at surface north rib Tenford Vein	0.3 m. thick quartz-sulphide vein @ 320/45	10N	646203	5670523	906

2008 Rock Sample Descriptions for Vidette Lake Project

Sample #	Descriptions
813251	White, green, red and locally bronze and black, 75% weakly banded, locally vuggy, quartz-calcite-chlorite-hematite-sulphide vein containing 2% sulphides primarily along vein selvidges as f.g. bands and clusters, with sulphides consisting of 1.5% pyrite, 0.2% chalcopyrite, 0.2% molybdenite, 0.1% tellurides?
813252	Green, black and red, 95% weakly magnetic, massive and locally sheared, f.g.-m.g., epidotic, chloritic, hematitic and locally sulphidic mafic volcanics and 5% thin quartz-sulphide stringers containing 0.5% sulphides as f.g. clusters, with sulphides consisting of 0.2% pyrite and 0.2% chalcopyrite and 0.1% molybdenite
813253	White, green, red and locally bronze and black, 75% weakly banded, locally vuggy, quartz-calcite-chlorite-hematite-sulphide vein containing 2% sulphides primarily as clusters along vein selvidges as f.g.-m.g. clusters, with sulphides consisting of 1% pyrite, 0.75% chalcopyrite, 0.25% tellurides?
813254	Green, black and red, 100% massive and locally sheared, m.g., epidotic, chloritic, hematitic mafic volcanics with mineral lineations along shear planes
813255	White, green, red, and locally bronze and black, 75% weakly banded, locally vuggy, quartz-calcite-chlorite-hematite-sulphide vein containing 2% sulphides primarily as clusters along vein selvidges as f.g.-m.g. fractured clusters, with sulphides consisting of 1% pyrite, 0.75% chalcopyrite, 0.25% tellurides?
813256	White, green, yellow and locally bronze and black, 95% weakly banded, rusty and fractured, quartz-chlorite-sulphide-malachite vein containing 3% sulphides as fractured, rusty and malachitic clusters and stringers along vein selvidges and as stockworks within vein, with sulphides consisting of 1.5% pyrite, 1% chalcopyrite, 0.25% molybdenite?, 0.25% tellurides?
813257	White, green, yellow and locally bronze and black, 95% weakly banded, rusty and fractured, quartz-chlorite-calcite-sulphide-malachite vein containing 4% sulphides as fractured, rusty and malachitic clusters, blebs and stringers with sulphides consisting of 2% pyrite, 1.75% chalcopyrite, 0.2% tellurides?, 0.05% bornite with rare platy gold? near bornite; also 1% kspar stringers

Geochemistry	Method	WGHT	3B	3B	3B	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	G6	1DX
by Acme	Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf	Au	Te
Analytical	Unit	KG	PPB	PPB	PPB	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	%	PPM	PPM	%	PPM	%	%	%	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM	GM/T	PPM
Laboratories	MDL	0.01	2	3	2	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01	0.01	0.5	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.5	0.5	0.5	0.17	1
Report #	**Sample #**																																													
VAN08005055	813251	1.27	877	<3	2	14.4	55.7	72.6	57	1.6	13.3	14	1963	3.19	<5	<0.5	<0.5	254	<0.5	1	<0.5	82	8.99	0.08	5.8	40	1.15	168	0.125	2.46	0.64	0.73	3.7	5.4	13	<0.5	8.5	0.7	<0.5	<5	10	11.2	0.7	16.5	<0.5	N.A.	N.A.
VAN08005055	813252	1.38	<2	5	8	0.6	144.3	12.6	158	<0.5	29.1	40	1871	7.65	<5	0.9	1.1	619	<0.5	1.8	<0.5	252	7.9	0.22	8.8	82	3.51	580	0.401	6.89	1.74	1.98	1.3	41.9	18	0.9	13	1.4	<0.5	<5	30	11.6	0.5	33.4	1.2	N.A.	N.A.
VAN08005055	813253	0.92	46	<3	3	32	174.4	12.1	69	<0.5	12.2	16	956	3.16	<5	<0.5	<0.5	185	<0.5	0.5	<0.5	82	4	0.07	2.5	42	0.99	181	0.118	2.28	0.6	0.9	1.9	5.1	6	<0.5	4	<0.5	<0.5	<5	9	12.2	1	22.4	<0.5	N.A.	N.A.
VAN08005055	813254	0.96	4	<3	10	0.6	154.8	60.9	180	<0.5	33.4	38	1796	8.53	<5	0.9	1.2	641	<0.5	1.4	<0.5	259	6.46	0.25	10	86	3.71	649	0.453	7.74	1.83	2	1.6	21	20	1.2	16.3	1.3	<0.5	<5	34	12.9	<0.5	46.4	1	N.A.	N.A.
VAN08005055	813255	0.61	15	<3	3	1.8	1256	7.4	90	1.8	13	21	1146	4.13	<5	<0.5	<0.5	241	0.8	1	<0.5	88	4.34	0.08	3.9	46	1.68	354	0.158	2.56	0.63	0.98	0.7	7.7	7	<0.5	5.8	0.6	<0.5	<5	11	13.1	1.2	20.5	<0.5	N.A.	N.A.
VAN08005055	813256	3.31	>10000	<3	<2	12.5	950.3	55.7	15	17.6	8.4	10	260	2.48	<5	<0.5	<0.5	37	<0.5	0.6	2.9	15	1.39	0.02	0.6	28	0.18	153	0.035	0.81	0.33	0.24	2.3	2.4	<5	<0.5	0.7	0.5	<0.5	<5	2	3.3	1.7	5.9	<0.5	12.28	17
VAN08005055	813257	4.36	>10000	<3	<2	12	3609	6	24	30.9	7.8	9	340	3.29	<5	<0.5	<0.5	35	<0.5	0.7	3.6	32	1.53	0.03	0.7	36	0.25	220	0.042	0.95	0.18	0.54	1.8	1.6	<5	<0.5	1.3	<0.5	<0.5	<5	3	3.4	2.2	11.7	<0.5	25.54	17

Appendix 4
Analytical Reports and
Laboratory Methods and Specifications

ACME ANALYTICAL LABORATORIES LTD.
852 E. Hastings St. Vancouver BC V6A 1R6 Canada
Phone (604) 253-3158 Fax (604) 253-1716
www.acmelab.com

Client: **Houle, Jacques**
6552 Peregrine Road
Nanaimo BC V9V 1P8 Canada

Submitted By: Jacques Houle
Receiving Lab: Acme Analytical Laboratories (Vancouver) Ltd.
Received: April 04, 2008
Report Date: April 22, 2008
Page: 1 of 2

CERTIFICATE OF ANALYSIS VAN08005055.2

CLIENT JOB INFORMATION

Project: None Given
Shipment ID:
P.O. Number
Number of Samples: 7

SAMPLE DISPOSAL

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

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

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Method Code	Number of Samples	Code Description	Test Wgt (g)	Report Status
R150	7	Crush, split and pulverize rock to 150 mesh		
3B	7	Fire assay fusion Au Pt Pd by ICP-ES	30	Completed
7TX	7	4 Acid Digestion Analysis by ICP-ES/ICP-MS	0.5	Completed
G6 Grav	2	Fire assay fusion Au by gravimetric finish	30	Completed
1DX	2	1:1:1 Aqua Regia digestion ICP-MS analysis	0.5	Completed

ADDITIONAL COMMENTS

Version 2 to include Group 6 grav and Te by 1DX

Invoice To: Houle, Jacques
6552 Peregrine Road
Nanaimo BC V9V 1P8
Canada

CC:

BRITISH COLUMBIA CERTIFIED ASSAYER
Clarence Leong

ACME ANALYTICAL LABORATORIES LTD.
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Client: **Houle, Jacques**
6552 Peregrine Road
Nanaimo BC V9V 1P8 Canada

Project: None Given
Report Date: April 22, 2008

CERTIFICATE OF ANALYSIS VAN08005055.2

	Method	WGHT	3B	3B	3B	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX
	Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi
	Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.01	2	3	2	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5
813251	Rock	1.27	877	<3	2	14.4	55.7	72.6	57	1.6	13.3	14	1963	3.19	<5	<0.5	<0.5	254	<0.5	1.0	<0.5
813252	Rock	1.38	<2	5	8	0.6	144.3	12.6	158	<0.5	29.1	40	1871	7.65	<5	0.9	1.1	619	<0.5	1.8	<0.5
813253	Rock	0.92	46	<3	3	32.0	174.4	12.1	69	<0.5	12.2	16	956	3.16	<5	<0.5	<0.5	185	<0.5	0.5	<0.5
813254	Rock	0.96	4	<3	10	0.6	154.8	60.9	180	<0.5	33.4	38	1796	8.53	<5	0.9	1.2	641	<0.5	1.4	<0.5
813255	Rock	0.61	15	<3	3	1.8	1256	7.4	90	1.8	13.0	21	1146	4.13	<5	<0.5	<0.5	241	0.8	1.0	<0.5
813256	Rock	3.31	>10000	<3	<2	12.5	950.3	55.7	15	17.6	8.4	10	260	2.48	<5	<0.5	<0.5	37	<0.5	0.6	2.9
813257	Rock	4.36	>10000	<3	<2	12.0	3609	6.0	24	30.9	7.8	9	340	3.29	<5	<0.5	<0.5	35	<0.5	0.7	3.6

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Project: None Given
Report Date: April 22, 2008

CERTIFICATE OF ANALYSIS VAN08005055.2

	Method	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX
	Analyte	V	Ca	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc
	Unit	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	10	0.01	0.01	0.5	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1
813251	Rock	82	8.99	0.08	5.8	40	1.15	168	0.125	2.46	0.64	0.73	3.7	5.4	13	<0.5	8.5	0.7	<0.5	<5	10
813252	Rock	252	7.90	0.22	8.8	82	3.51	580	0.401	6.89	1.74	1.98	1.3	41.9	18	0.9	13.0	1.4	<0.5	<5	30
813253	Rock	82	4.00	0.07	2.5	42	0.99	181	0.118	2.28	0.60	0.90	1.9	5.1	6	<0.5	4.0	<0.5	<0.5	<5	9
813254	Rock	259	6.46	0.25	10.0	86	3.71	649	0.453	7.74	1.83	2.00	1.6	21.0	20	1.2	16.3	1.3	<0.5	<5	34
813255	Rock	88	4.34	0.08	3.9	46	1.68	354	0.158	2.56	0.63	0.98	0.7	7.7	7	<0.5	5.8	0.6	<0.5	<5	11
813256	Rock	15	1.39	0.02	0.6	28	0.18	153	0.035	0.81	0.33	0.24	2.3	2.4	<5	<0.5	0.7	0.5	<0.5	<5	2
813257	Rock	32	1.53	0.03	0.7	36	0.25	220	0.042	0.95	0.18	0.54	1.8	1.6	<5	<0.5	1.3	<0.5	<0.5	<5	3

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Project: None Given
Report Date: April 22, 2008

CERTIFICATE OF ANALYSIS VAN08005055.2

	Method	7TX	7TX	7TX	7TX	G6	1DX
	Analyte	Li	S	Rb	Hf	Au	Te
	Unit	ppm	%	ppm	ppm	GM/T	ppm
	MDL	0.5	0.5	0.5	0.5	0.17	1
813251	Rock	11.2	0.7	16.5	<0.5	N.A.	N.A.
813252	Rock	11.6	0.5	33.4	1.2	N.A.	N.A.
813253	Rock	12.2	1.0	22.4	<0.5	N.A.	N.A.
813254	Rock	12.9	<0.5	46.4	1.0	N.A.	N.A.
813255	Rock	13.1	1.2	20.5	<0.5	N.A.	N.A.
813256	Rock	3.3	1.7	5.9	<0.5	12.3	17
813257	Rock	3.4	2.2	11.7	<0.5	25.5	17

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Project: None Given
Report Date: April 22, 2008

QUALITY CONTROL REPORT VAN08005055.2

	Method	WGHT	3B	3B	3B	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX
	Analyte	Wgt	Au	Pt	Pd	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi
	Unit	kg	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	0.01	2	3	2	0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5
Pulp Duplicates																					
813252	Rock	1.38	<2	5	8	0.6	144.3	12.6	158	<0.5	29.1	40	1871	7.65	<5	0.9	1.1	619	<0.5	1.8	<0.5
REP 813252	QC		<2	4	8																
813255	Rock	0.61	15	<3	3	1.8	1256	7.4	90	1.8	13.0	21	1146	4.13	<5	<0.5	<0.5	241	0.8	1.0	<0.5
REP 813255	QC					2.3	1262	7.9	98	1.7	13.0	23	1188	4.29	<5	<0.5	<0.5	247	0.8	0.7	<0.5
813256	Rock	3.31	>10000	<3	<2	12.5	950.3	55.7	15	17.6	8.4	10	260	2.48	<5	<0.5	<0.5	37	<0.5	0.6	2.9
REP 813256	QC																				
813257	Rock	4.36	>10000	<3	<2	12.0	3609	6.0	24	30.9	7.8	9	340	3.29	<5	<0.5	<0.5	35	<0.5	0.7	3.6
REP 813257	QC		>10000	<3	<2																
Reference Materials																					
STD DS7	Standard																				
STD DS7	Standard																				
STD FA10R	Standard		492	479	483																
STD FA10R	Standard		500	476	489																
STD OXP39	Standard																				
STD SF-3T	Standard					314.0	7772	8457	10678	54.5	3541	181	4149	8.12	39	3.9	4.8	434	48.0	10.7	4.8
STD SF-3T	Standard					323.5	7875	8980	11092	54.1	3670	189	4221	8.48	42	4.7	5.0	444	48.3	10.7	4.9
STD SF-3T Expected						320	7723	9610	10672	52	3500	181	4320	8.33	40	4	4.7	440	47.5	11.1	4.8
STD FA10R Expected			485	472	476																
STD OXP39 Expected																					
STD DS7 Expected																					
BLK	Blank		<2	<3	<2																
BLK	Blank					<0.5	<0.5	<0.5	<5	<0.5	<0.5	<1	<5	<0.01	<5	<0.5	<0.5	<5	<0.5	<0.5	<0.5
BLK	Blank		18	<3	<2																
BLK	Blank																				
BLK	Blank																				
Prep Wash																					
G1	Prep Blank	<0.01	<2	<3	<2	1.0	0.6	91.3	59	<0.5	4.8	5	863	2.46	<5	4.3	8.8	764	<0.5	<0.5	<0.5

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Project: None Given
Report Date: April 22, 2008

QUALITY CONTROL REPORT VAN08005055.2

	Method	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX	7TX
	Analyte	V	Ca	P	La	Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc
	Unit	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	MDL	10	0.01	0.01	0.5	1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1
Pulp Duplicates																					
813252	Rock	252	7.90	0.22	8.8	82	3.51	580	0.401	6.89	1.74	1.98	1.3	41.9	18	0.9	13.0	1.4	<0.5	<5	30
REP 813252	QC																				
813255	Rock	88	4.34	0.08	3.9	46	1.68	354	0.158	2.56	0.63	0.98	0.7	7.7	7	<0.5	5.8	0.6	<0.5	<5	11
REP 813255	QC	92	4.44	0.09	3.8	42	1.74	369	0.162	2.68	0.65	1.00	0.9	8.2	8	0.6	6.8	<0.5	<0.5	<5	11
813256	Rock	15	1.39	0.02	0.6	28	0.18	153	0.035	0.81	0.33	0.24	2.3	2.4	<5	<0.5	0.7	0.5	<0.5	<5	2
REP 813256	QC																				
813257	Rock	32	1.53	0.03	0.7	36	0.25	220	0.042	0.95	0.18	0.54	1.8	1.6	<5	<0.5	1.3	<0.5	<0.5	<5	3
REP 813257	QC																				
Reference Materials																					
STD DS7	Standard																				
STD DS7	Standard																				
STD FA10R	Standard																				
STD FA10R	Standard																				
STD OXP39	Standard																				
STD SF-3T	Standard	113	3.97	0.06	18.1	199	4.60	670	0.189	5.32	2.04	2.46	4.3	30.9	39	5.7	10.5	15.2	<0.5	<5	7
STD SF-3T	Standard	127	4.08	0.06	20.7	203	4.73	746	0.193	5.47	2.10	2.52	3.7	15.2	45	6.1	10.1	15.0	<0.5	<5	7
STD SF-3T Expected		143	4.1	0.06	17	207.4	4.67	508	0.19	5.43	2.06	2.47	4.3	14	38	5.8	11.5	15.1	0.9	0	7
STD FA10R Expected																					
STD OXP39 Expected																					
STD DS7 Expected																					
BLK	Blank																				
BLK	Blank	<10	<0.01	<0.01	<0.5	<1	<0.01	<5	<0.001	<0.01	<0.01	<0.01	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<5	<1
BLK	Blank																				
BLK	Blank																				
BLK	Blank																				
Prep Wash																					
G1	Prep Blank	49	2.47	0.09	28.3	15	0.66	985	0.231	8.78	2.77	3.25	<0.5	11.8	55	1.4	16.8	25.1	1.1	6	5

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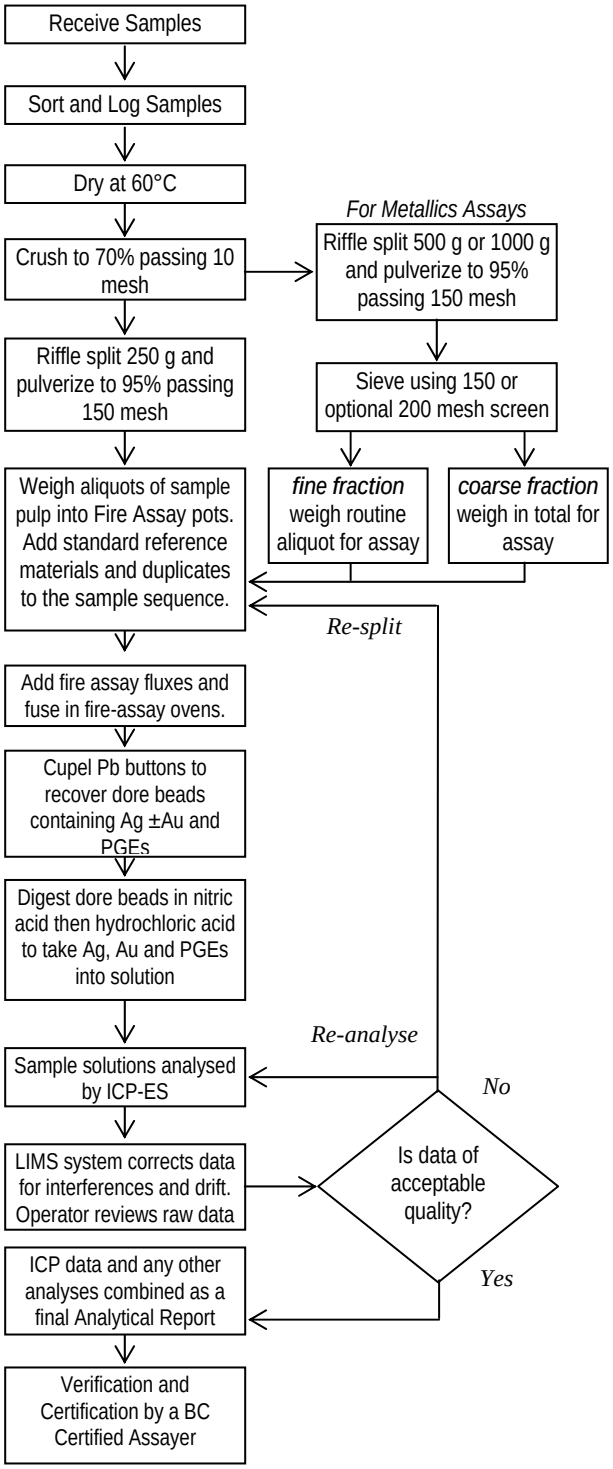
Project: None Given
Report Date: April 22, 2008

QUALITY CONTROL REPORT VAN08005055.2

	Method	7TX	7TX	7TX	7TX	G6	1DX
	Analyte	Li	S	Rb	Hf	Au	Te
	Unit	ppm	%	ppm	ppm	GM/T	ppm
	MDL	0.5	0.5	0.5	0.5	0.17	1
Pulp Duplicates							
813252	Rock	11.6	0.5	33.4	1.2	N.A.	N.A.
REP 813252	QC						
813255	Rock	13.1	1.2	20.5	<0.5	N.A.	N.A.
REP 813255	QC	10.1	1.3	22.5	<0.5		
813256	Rock	3.3	1.7	5.9	<0.5	12.3	17
REP 813256	QC					12.4	
813257	Rock	3.4	2.2	11.7	<0.5	25.5	17
REP 813257	QC						
Reference Materials							
STD DS7	Standard						<1
STD DS7	Standard						2
STD FA10R	Standard						
STD FA10R	Standard						
STD OXP39	Standard					14.9	
STD SF-3T	Standard	25.1	3.5	79.0	0.8		
STD SF-3T	Standard	18.8	3.7	86.9	0.6		
STD SF-3T Expected		19.1	3.5	90.8	0.6		
STD FA10R Expected							
STD OXP39 Expected						14.89	
STD DS7 Expected							1.08
BLK	Blank						
BLK	Blank	<0.5	<0.5	<0.5	<0.5		
BLK	Blank						
BLK	Blank					<0.17	
BLK	Blank						<1
Prep Wash							
G1	Prep Blank	36.4	<0.5	134.6	0.8	N.A.	N.A.

METHODS AND SPECIFICATIONS FOR ANALYTICAL PACKAGE
GROUP 6 – PRECIOUS METALS ASSAY

Analytical Process



Comments

Sample Preparation

Rock and drill core are jaw crushed to 70% passing 10 mesh (2 mm), a 250 g riffle split is then pulverized to 95% passing 150 mesh (100 μm) in a mild-steel ring-and-puck mill. One assay ton aliquots (29.2 g) are weighed into fire assay crucibles. Option for 2 assay-ton aliquots is available on request. Smaller aliquots of ¼ or ½ assay ton may be required with difficult ore matrices.

Metallics Assay: A 500 g reject split (or optional 1000 g) is pulverized to 95% passing 150 mesh. Screening the pulp gives a fine and coarse fraction (containing any coarse gold) for assaying.

Sample Digestion

The sample aliquot is custom blended with fire assay fluxes, PbO litharge and a Ag inquart. Firing the charge at 1050°C liberates Au, Ag ± PGEs that report to the molten Pb-metal phase. After cooling the Pb button is recovered placed in a cupel and fired at 950°C to render a Ag ± Au ± PGEs dore bead. The bead is weighed and parted (i.e. leached in 1 mL of hot HNO_3) to dissolve Ag leaving a Au sponge. Adding 10 mL of HCl dissolves the Au ± PGE sponge.

Sample Analysis

Solutions are analysed for Ag, Au, Pt and Pd on a Jarrel-Ash Atomcomp model 975 ICP emission spectrometer. Au in excess of 30 g/t forms a large sponge that can be weighed (gravimetric finish). Ag in excess of 100 g/t is reported from the fire assay, otherwise a separate split is digested in aqua regia and analysed by ICP-ES (Group 7AR).

Metallics Assay: The coarse fraction is assayed in total. An aliquot of the fine fraction is assayed. Results report the total Au in the coarse fraction, the fine-fraction Au concentration and a weighted average Au concentration for the entire sample.

Quality Control and Data Verification

An Analytical Batch (1 page) comprises 34 samples. QA/QC protocol incorporates a sample-prep blank (G-1) as the first sample carried through all stages of preparation to analysis, a pulp duplicate to monitor analytical precision, a -10 mesh rejects duplicate to monitor sub-sampling variation (drill core only), two reagent blanks to measure background and aliquots of Rocklabs Certified Reference Materials like SL20 to monitor accuracy.

Raw and final data undergo a final verification by a British Columbia Certified Assayer who signs the Analytical Report before it is released to the client.

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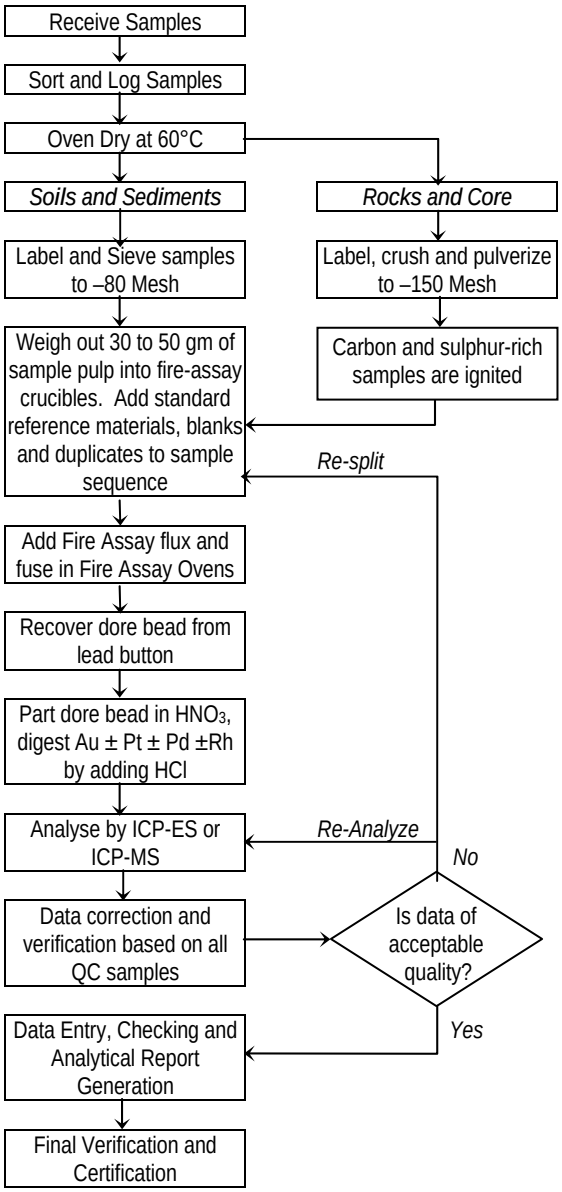
METHODS AND SPECIFICATIONS FOR ANALYTICAL PACKAGE GROUP 3B & 3B-MS - PRECIOUS METALS BY FIRE GEOCHEM

Analytical Process



Comments

Sample Preparation

Soils and sediments are dried (60°C) and sieved to -80 mesh ASTM (-177 m). Rocks and drill core are crushed and pulverized to 95% -150 mesh ASTM (-100 µm). Splits of 30 gm (client may select 50 gm option) are weighed into fire assay crucibles. Quality control samples comprising blanks, duplicates and reference materials OxF41 or FA-100S (Rocklabs CRM and in-house standard reference materials) added to each batch of 34 samples monitor background, precision and accuracy, respectively.

Sample Digestion

A fire assay charge comprising fluxes, litharge and a Ag inquart is custom mixed for each sample. Fusing at 1050°C for 1 hour liberates Au, Ag, Pt, Pd and Rh. The Pb button is recovered after cooling and cupeled at 950°C to render a Ag ±Au ±Pt ±Pd ±Rh dore bead. After weighing, the bead is parted in HNO_3 leaving Au (± PGE) sponge. Adding concentrated HCl dissolves the sponges.

Sample Analysis

Solutions are analysed by ICP-ES (Jarrel Ash AtomComp model 800 or 975) analysis of the solutions to determine Au, Pt, and Pd. Group 3B-MS analyses the same solutions by ICP-MS (Perkin Elmer Elan 6000) to determine Au, Pt, Pd and Rh to much lower detection limits. Owing to the limited solubility of Rh in a Ag inquart, results are qualitative.

Data Evaluation

Data is inspected by the Fire Assay Supervisor then undergoes final verification by a British Columbia Certified Assayer who signs the Analytical Report before release to the client.

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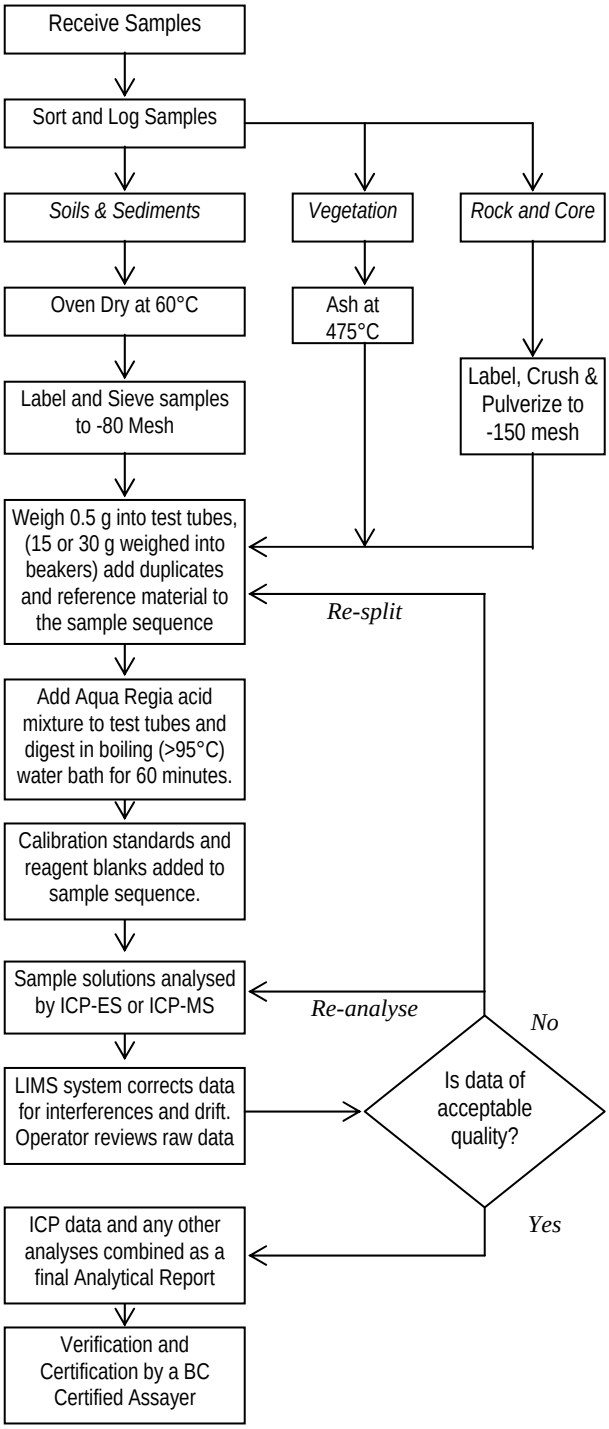
Vancouver 2003

METHODS AND SPECIFICATIONS FOR ANALYTICAL PACKAGE GROUP 1D & 1DX – ICP & ICP-MS ANALYSIS – AQUA REGIA

Analytical Process



Comments

Sample Preparation

All samples are dried at 60°C. Soil and sediment are sieved to -80 mesh (-177 μm). Moss-mats are disaggregated then sieved to yield -80 mesh sediment. Vegetation is pulverized or ashed (475°C). Rock and drill core is jaw crushed to 70% passing 10 mesh (2 mm), a 250 g riffle split is then pulverized to 95% passing 150 mesh (100 μm) in a mild-steel ring-and-puck mill. Pulp splits of 0.5 g are weighed into test tubes, 15 and 30 g splits are weighed into beakers.

Sample Digestion

A modified Aqua Regia solution of equal parts concentrated ACS grade HCl and HNO_3 and de-mineralised H_2O is added to each sample to leach for one hour in a hot water bath (>95°C). After cooling the solution is made up to final volume with 5% HCl. Sample weight to solution volume is 1 g per 20 mL.

Sample Analysis

Group 1D: solutions aspirated into a Jarrel Ash AtomComp 800 or 975 ICP or Spectro Ciros Vision emission spectrometer are analysed for 30 elements: Ag, Al, As, Au, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Sr, Th, Ti, U, V, W, Zn.

Group 1DX: solutions aspirated into a Perkin Elmer Elan 6000/9000 ICP mass spectrometer are analysed for 36 elements: Ag, Al, As, Au, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, *Ga*, *Hg*, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, *S*, Sb, *Sc*, *Se, Tl*, Sr, Th, Ti, U, V, W, Zn.

Quality Control and Data Verification

An Analytical Batch (1 page) comprises 36 samples. QA/QC protocol incorporates a sample-prep blank (G-1) carried through all stages of preparation and analysis as the first sample, a pulp duplicate to monitor analytical precision, a -10 mesh rejects duplicate to monitor sub-sampling variation (drill core only), a reagent blank to measure background and an aliquot of in-house Standard Reference Materials like STD DS7 to monitor accuracy.

Raw and final data undergo a final verification by a British Columbia Certified Assayer who signs the Analytical Report before it is released to the client.

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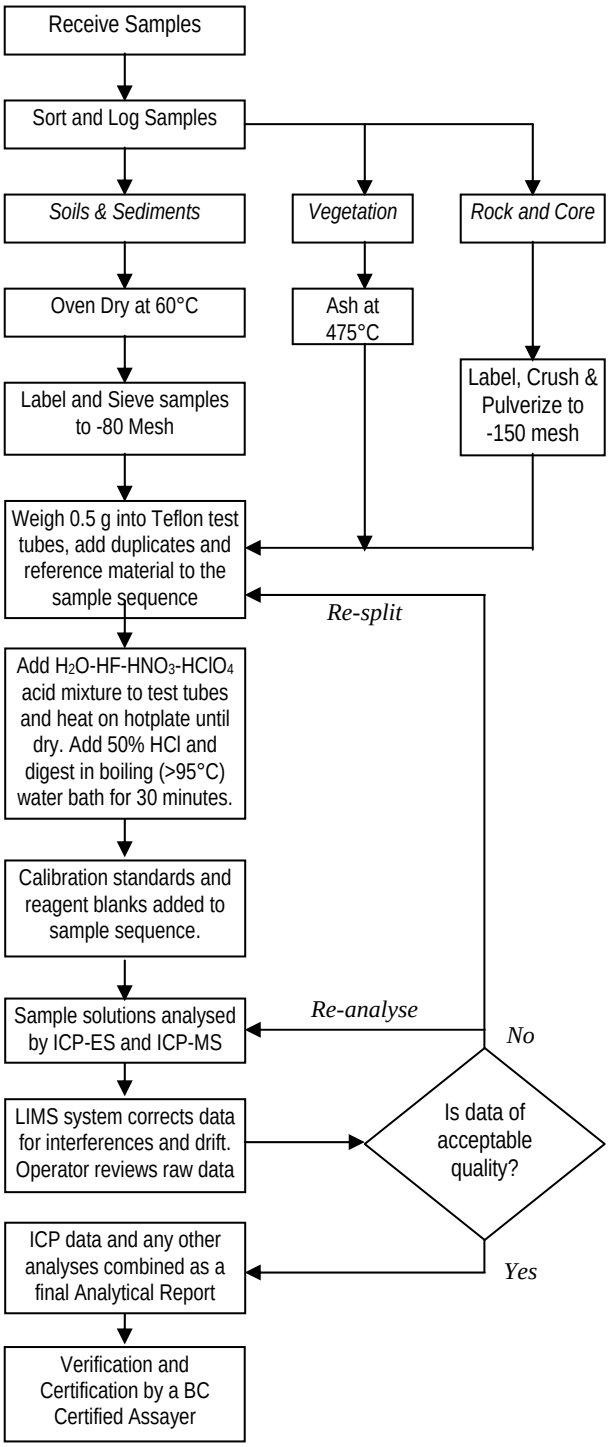
METHODS AND SPECIFICATIONS FOR ANALYTICAL PACKAGE
GROUP 7TX – MULTI-ELEMENT ASSAY BY ICP-ES/MS • 4-ACID DIGESTION

Analytical Process



Comments

Sample Preparation

All samples are dried at 60°C. Soil and sediment are sieved to -80 mesh (-177 μm). Moss-mats are disaggregated then sieved to yield -80 mesh sediment. Vegetation is pulverized or ashed (475°C). Rock and drill core is jaw crushed to 70% passing 10 mesh (2 mm), a 250 g riffle split is then pulverized to 95% passing 150 mesh (100 μm) in a mild-steel ring-and-puck mill. Pulp splits of 0.5 g are weighed into Teflon test tubes.

Sample Digestion

A 20 mL aliquot of the acid solution (2:2:1:1 H_2O-HF-$HClO_4$-HNO_3) is added, heated until fuming on a hot plate and taken to dryness. A 16 mL aliquot of 50% HCl is added to the residue and heated in a hot-water bath (~95°C) for 30 minutes. After cooling the solutions are transferred to 100 mL volumetric flasks and made to volume with 5% HCl.

Sample Analysis

Solutions are aspirated into a Jarrel Ash Atomcomp model 800 or 975 or Spectro Ciros Vision ICP atomic-emission spectrometer followed by analysis by Perkin Elmer Elan 6000 or 9000 ICP Mass spectrometer analysed for a 40 element package comprising: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cu, Fe, Hf, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, S, Sb, Sc, Sn, Sr, Ta, Th, Ti, U, V, W, Y, Zn and Zr. Very high grade samples may require a 0.4 g to 100 mL or 0.25 g to 250 mL sample to solution ratio for accurate determination.

Quality Control and Data Verification

An Analytical Batch (1 page) comprises 33 samples. QA/QC protocol incorporates a sample-prep blank (G-1) carried through all stages of preparation and analysis as the first sample, a pulp duplicate to monitor analytical precision, a -10 mesh rejects duplicate to monitor sub-sampling variation (drill core only), two reagent blanks to measure background and aliquots of in-house Standard Reference Materials like STD SF-2t to monitor accuracy.

Raw and final data undergo a final verification by a British Columbia Certified Assayer who signs the Analytical Report before it is released to the client.

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