



Ministry of Energy and Mines  
BC Geological Survey

**BC Geological Survey  
Assessment Report  
37598**



Assessment Report  
Title Page and Summary

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

TOTAL COST: \$3,107.72

AUTHOR(S): Andris Kikauka

SIGNATURE(S):

A. Kikauka

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): \_\_\_\_\_

YEAR OF WORK: 2018

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5700126

PROPERTY NAME: Marysville

CLAIM NAME(S) (on which the work was done): 1036819, 1053039

COMMODITIES SOUGHT: Magnesite

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 082GNW005

MINING DIVISION: Fort Steele

NTS/BCGS: 082 G 12/W, 082G.051

LATITUDE: 49 ° 34 ' 40 " LONGITUDE: 115 ° 58 ' 33 " (at centre of work)

OWNER(S):

1) MGX Minerals Inc

2) Jared Lazerson

MAILING ADDRESS:

303-1080 Howe Street

303-1080 Howe Street

Vancouver, BC V6Z 2T1

Vancouver, BC V6Z 2T1

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

1) same

2) \_\_\_\_\_

MAILING ADDRESS:

same

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

Magnesite occurs as conformable beds 1-30 meters wide, strike length of 4 km (discontinuous) hosted in Cambrian Cranbrook Fm. Magnesite is intercalated in sequence of weakly metamorphosed sandstone (quartzite), shale (phyllite), and carbonate (marble). Magnesite is coarse crystalline (sparry) and resistant to weathering forming low-relief ridge crests trending 30 degrees dipping steep-moderate NW. Late NW & NE trending faults (Cretaceous Larimide orogeny) have offset beds 10-40 meters

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 30075, 34831, 35436, 36596, 36600

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
<b>GEOLOGICAL (scale, area)</b>			
Ground, mapping _____			
Photo interpretation _____			
<b>GEOPHYSICAL (line-kilometres)</b>			
<b>Ground</b>			
Magnetic _____			
Electromagnetic _____			
Induced Polarization _____			
Radiometric _____			
Seismic _____			
Other _____			
Airborne _____			
<b>GEOCHEMICAL (number of samples analysed for...)</b>			
Soil _____			
Silt _____			
Rock 8 ALS ME-XRF26 whole rock geochemistry		1036819, 1053039	3,107.72
Other _____			
<b>DRILLING (total metres; number of holes, size)</b>			
Core _____			
Non-core _____			
<b>RELATED TECHNICAL</b>			
Sampling/assaying _____			
Petrographic _____			
Mineralographic _____			
Metallurgic _____			
<b>PROSPECTING (scale, area)</b> _____			
<b>PREPARATORY / PHYSICAL</b>			
Line/grid (kilometres) _____			
Topographic/Photogrammetric (scale, area) _____			
Legal surveys (scale, area) _____			
Road, local access (kilometres)/trail _____			
Trench (metres) _____			
Underground dev. (metres) _____			
Other _____			
<b>TOTAL COST:</b>			<b>3,107.72</b>

Lat. 49 34' 40" N  
Long. 115 58' 33" W  
NTS 082 G/12 W  
BCGS 082G.051  
UTM 574,500 E, 5,493,100 N (NAD 83)

**GEOCHEMICAL REPORT  
ON MARYSVILLE PROPERTY (MTO ID 1029860, 1033194, 1033236,  
1036819, 1044738, 1047074, & 1053039 MINERAL CLAIMS)  
MAGNESITE MINERALIZATION**

**PERRY CREEK  
ST MARY'S RIVER,  
MARYSVILLE, BC  
FORT STEELE MINING DIVISION**

**Submitted by:  
Andris Kikauka, P.Geo.  
4199 Highway 101,  
Powell R, BC V8A 0C7**

37,598

**June 20, 2018**

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### Mineral Claim Exploration and Development Work/Expiry Date Change

**Confirmation**
**Recorder:** KIKAUKA, ANDRIS  
ARTURS (114051)

**Submitter:** KIKAUKA, ANDRIS  
ARTURS (114051)

**Recorded:** 2018/JUN/11

**Effective:** 2018/JUN/11

**D/E Date:** 2018/JUN/11

**Confirmation**

If you have not yet submitted your report for this work program, your technical work report is due in 90 days. The Exploration and Development Work/Expiry Date Change event number is required with your report submission. **Please attach a copy of this confirmation page to your report.** Contact Mineral Titles Branch for more information.

**Event Number:** 5700126

**Work Type:** Technical Work

**Technical Items:** Geochemical, PAC Withdrawal (up to 30% of technical work required)

**Work Start Date:** 2018/MAY/19

**Work Stop Date:** 2018/MAY/21

**Total Value of Work:** \$ 3107.72

**Mine Permit No:**
**Summary of the work value:**

Title Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days Forward	Area in Ha	Applied Work Value	Submission Fee
1029860	MARYSVILLE SOUTH	2014/JUL/25	2019/NOV/01	2020/May/10	191	188.56	\$ 1476.02	\$ 0.00
1033236	MARYSVILLE MAGNESIUM	2015/JAN/08	2019/NOV/01	2020/may/10	191	20.95	\$ 144.62	\$ 0.00
1033194	MAG 1	2015/JAN/07	2019/NOV/01	2020/may/10	191	125.68	\$ 869.38	\$ 0.00
1036819	MAG 2	2015/JUN/20	2022/OCT/01	2022/OCT/01	0	62.83	\$ 0.00	\$ 0.00
1044738	MAG 3	2016/JUN/14	2021/DEC/05	2022/may/01	147	83.77	\$ 506.04	\$ 0.00
1047074	MAG 4	2016/OCT/04	2021/DEC/05	2022/may/01	147	41.88	\$ 253.00	\$ 0.00
1053039	MAG 5	2017/JUL/10	2018/JUL/10	2022/may/01	1391	41.89	\$ 1176.44	\$ 0.00

**Financial Summary:**
**Total applied work value:** \$ 4425.50

**PAC name:** Andris Arturs Kikauka

**Debited PAC amount:** \$ 1317.78

**Credited PAC amount:** \$ 0

**Total Submission Fees:** \$ 0.0

**Total Paid:** \$ 0.0

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## SUMMARY

Marysville magnesite occurrences are located about 7 km (4.5 miles) south-southwest of Marysville, BC and approximately 12 km (7.7 miles) south of Kimberly, BC (Fig 1, 2). The Marysville MTO tenures (1029860, 1033194, 1033236, 1036819, 1044738, 1047074, & 1053039) cover a total area of approximately 556.55 hectares (1,396.9 acres). The Marysville sediment hosted magnesite occurs as coarse crystalline massive lenses that trend north-northeast, dip 50 to 80 degrees northwest, are 5-15 meters wide (up to 75 m width including interbedded magnesite, quartzite & siltstone), and individual magnesite lenses vary from 60-600 meter strike length (including minor fault offsets in the order of 5-75 meters). Magnesite lenses form a combined strike length of approximately 2,200 meters along a total strike length of 6,000 meters, hosted in Lower Cambrian Cranbrook Formation quartzite (minor siltstone). Geological mapping suggests that the Cranbrook Formation is variable between 200 to 300 meters true thickness.

The magnesite lenses contain variable amounts of quartz (8 rock chip samples range 2.98-8.48% SiO<sub>2</sub>). Other impurities include trace amounts of serpentine and talc, as well as approximately 1% CaO and 1% Al<sub>2</sub>O<sub>3</sub>. Quartz present in the magnesite was probably deposited in the Cambrian(?) as chert and re-crystallized during Cretaceous(?) deep burial low-grade regional metamorphism resulting in textures that include milky-white micro-veinlet quartz sweets, patches and bands of clear, glassy recrystallized chert. Silica can be removed from magnesite by flotation/gravity methods used for processing.

The writer performed fieldwork consisting of geochemical sampling and geological mapping on the south portion of Marysville magnesite. Fieldwork was carried out May 19-21, 2018. Technical work is recorded in this assessment report, and reported as MEM Event number 5700126. Geochemical sampling was carried out on exposed surface bedrock located in close proximity to historic mapped lenses of magnesite. A total of 4 rock chip samples were collected from 1 meter intervals from various surface outcrop (sample numbers 18-Ma 5-8), and an additional 4 angular shaped float (from soil horizon or sub-crop, i.e. unconsolidated rock clast loosened from bedrock) rock chip samples (numbers 18Ma-1 to 4). Rock chip samples were analyzed by ALS Minerals, North Vancouver, BC, using Li Borate fusion, whole rock analysis ME-XRF-06 (XRF26). Geological descriptions and geochemical analysis results from Marysville Central Zone (MTO ID 1036819 & 1053039) are listed as follows:

Sample ID	Zone name	Easting NAD 83	Northing NAD 83	Elev (m)	Type	Lithology
18MA-1	Central Zone	574702	5493292	1340	sub-crop	sparry magnesite
18MA-2	Central Zone	574613	5493179	1363	sub-crop	sparry magnesite
18MA-3	Central Zone	574567	5493143	1379	sub-crop	sparry magnesite
18MA-4	Central Zone	574537	5493078	1374	sub-crop	sparry magnesite
18MA-5	Central Zone	574507	5493042	1383	outcrop	sparry magnesite
18MA-6	Central Zone	574490	5492995	1386	outcrop	sparry magnesite
18MA-7	Central Zone	574469	5492941	1389	outcrop	sparry magnesite
18MA-8	Central Zone	574558	5492908	1390	outcrop	sparry magnesite

Sample ID	Alteration	Mineralization	Comments	Bed Strike	Bed Dip	Width (cm)
18MA-1	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-2	weak qtz stringers, sweats <1 mm	magnesite	outcrop	33	66 NW	100
18MA-3	weak qtz stringers, sweats <1 mm	magnesite	outcrop	35	68 NW	100
18MA-4	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-5	weak qtz stringers, sweats <1 mm	magnesite	outcrop	35	72 NW	100
18MA-6	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	70 NW	100
18MA-7	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	54 NW	100
18MA-8	weak qtz stringers, sweats <1 mm	magnesite	outcrop	31	57 NW	100

Sample ID	Al2O3%	BaO%	CaO%	Fe2O3%	K2O%	MgO%	MnO%	Na2O%
18MA-1	1.12	<0.01	0.83	0.59	0.01	44.9	0.01	0.1
18MA-2	0.87	<0.01	1.06	0.48	0.21	41.9	0.01	0.1
18MA-3	0.83	<0.01	1.04	0.5	0.19	41.8	0.01	0.09
18MA-4	1.04	<0.01	1.42	0.82	0.01	43	0.01	0.09
18MA-5	1.01	<0.01	1.26	0.76	0.04	43.3	0.01	0.09
18MA-6	0.98	<0.01	1.16	0.79	0.01	43.8	0.01	0.09
18MA-7	0.87	<0.01	1.06	0.69	0.03	43.9	0.01	0.09
18MA-8	1	<0.01	1.22	0.81	0.02	42.6	0.01	0.09
average	0.96		1.13	0.68				

Sample ID	P2O5%	SO3%	SiO2%	TiO2%	Total%	LOI%	MgO%/Total%
18MA-1	0.07	0.02	2.98	0.04	99.6	48.93	45.08
18MA-2	0.12	0.02	8.39	0.05	99.53	46.32	42.1
18MA-3	0.11	0.01	8.48	0.06	99.44	46.32	42.04
18MA-4	0.44	0.02	5.58	0.04	99.93	47.06	43.2
18MA-5	0.33	0.01	5.31	0.05	99.64	47.47	43.46
18MA-6	0.26	0.02	4.41	0.04	99.52	47.95	44.01
18MA-7	0.15	0.02	3.93	0.04	99.42	48.63	44.16
18MA-8	0.32	0.02	6.31	0.04	99.96	46.92	42.87



The relatively high MgO content (42.1-45.1% MgO%/Total%) compares favourably with other magnesite producers such as Baymag property near Radium Hot Springs, BC (NOTE: pure magnesite is about 47.6% MgO). Impurity compounds of interest (Al<sub>2</sub>O<sub>3</sub>, CaO) approach specifications required for producing deadburn, calcined and fused magnesia. The relatively high SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub>, may require beneficiation in order to remove iron-bearing mineral impurities (e.g. siderite). Based on the range of %MgO and impurities Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, CaO, Fe<sub>2</sub>O<sub>3</sub>, detailed mapping, geochemical sampling and core drilling is recommended in order to test the extent and purity of the Marysville magnesite, leading to metallurgical testing for suitability for use as a raw material for refractories in the steel industry as well as other industrial end uses such as agricultural, fire retardant, and/or specialized moisture/mold resistant filler, MgCl (road salt).

The magnesite member of the Cranbrook Formation quartzite is extensive throughout the local area as lenses along a 6 kilometer strike length. In the southern portion of Marysville magnesite there appears to be NNE trending, steeply west dipping layer approximately 1,000 meters in strike length, and in the range of 3-15 meters width of magnesite mineralization that represents a significant drill target, especially where the widest magnesite zones are located near the boundary of MTO tenures 1033194 and 1029860. The Central Zone represents similar geological setting as the South Zone with more difficult access due to higher elevation and moderate slope, but a phase 2 drill program would be considered for the central zone after phase 1 drilling of south zone.

MGX is planning further evaluation of commercial applications for Marysville magnesite as well as geochemical analysis of rock samples and diamond drill core in order to determine grade and distribution of Marysville Magnesite

## **1.0 Introduction**

This technical report has been prepared on behalf of MGX Minerals Inc, and describes property history and recent geological and geochemical fieldwork done on the Marysville Magnesite mineral (May 19-21, 2018). This report is prepared to comply with BC Ministry of Energy and Mines Mineral Act requirements for filing assessment reports.

## **2.0 Location, Access, Infrastructure, & Physiography**

The Marysville Magnesite property consists of MTO tenure ID numbers 1033194, 1029860, and 1033236 that are located approximately 12 km (7.7 miles) south of Kimberly, BC (Fig 1, 2). The property is located on NTS map sheet 082G/12W and on TRIM map sheet 082G.051 in the Fort Steele Mining Division of southern British Columbia, Canada (Figure 2). The Marysville Magnesite occurrences are located near latitude 49°34' 40" N and longitude 115°58' 33" W. The property covers a north to northeast trending ridge forming quartzite with lenses of relatively pure magnesite, located approximately 1-6 km northwest of Perry Creek. Near Antwerp Creek canyon topography is steep, and N to NE trending cliffs less than 7 m (23 ft) high occur in the

vicinity of a NNE trending, sub-vertical dipping major fault. Elevations on the claim block range from 1,000 to 1,550 meters (3,280-5,084 feet).

The Marysville magnesite property can be accessed using Perry Creek FSR, which is connected to paved Interprovincial Highway 95A located east of the property. There is good infrastructure in the form of paved highways, a CPR spur line and a major power line all of which are within 10 kilometres of the property. Marysville magnesite deposit is partly exposed on surface, as a series of NNE trending outcrops. A series of northwest trending, cross-cutting faults has resulted in some small scale dextral offsets (in the order of 5-75 meters) of geologic contacts.

Vegetation on the property consists mainly of Lodgepole Pine with lesser Douglas Fir and Western Yellow Larch, with minor birch and aspen. The nearest towns are Marysville, Cranbrook and Kimberly on Highway 95A. Both Kimberly and Cranbrook have suitable infrastructure to support mining and mineral processing.

### 3.0 Property Status

The Marysville magnesite claim consists of seven (7) mineral tenures (listed below) located within the Fort Steele Mining Division (Figure 2).

Tenure number	Claim Name	Issue Date	Good To Date	Area in hectares
1029860	Marysville South	2014/jul/25	2020/may/10	188.56
1033194	Mag 1	2015/jan/07	2020/may/10	125.68
1033236	Marysville Magnesium	2015/jan/08	2020/may/10	20.95
1036819	Mag 2	2020/may/10	2022/oct/01	62.83
1044738	Mag 3	2020/may/10	2022/may/01	83.77
1047074	Mag 4	2020/may/10	2022/may/01	41.88
10533039	Mag 5	2020/may/10	2022/may/01	41.89

The total area of the mineral tenures that comprise the property is 556.55 hectares (1,396.9 acres). Details of the status of tenure ownership for the Marysville Magnesite property were obtained from the Mineral-Titles-Online (MTO) electronic staking system managed by the Mineral Titles Branch of the Province of British Columbia. This system is based on mineral tenures acquired electronically online using a grid cell selection system. Tenure boundaries are based on lines of latitude and longitude. There is no requirement to mark claim boundaries on the ground as these can be determined with reasonable accuracy using a GPS. The Marysville magnesite claim has not been surveyed.

The mineral tenures comprising the Marysville Magnesite mineral property are shown in Figure 2. The claim map shown in Figure 2 was generated from GIS spatial data downloaded from the Government of BC GeoBC website. These spatial layers are the same as those incorporated into the Mineral-Titles-Online (MTO) electronic staking system that is used to locate and record mineral tenures in British Columbia. Information posted on the MTO website indicates that mineral tenures 1033194, 1036819, 1044738, 1047074, & 1053039 are owned 100% by MGX Minerals Inc, and mineral tenures 1029860 and 1033236 are owned 100% by Jared Lazerson (CEO MGX Minerals Inc).

#### **4.0 Marysville Magnesite Property History**

In 1932 the GSC announced the discovery of coarse crystalline magnesite in the area between Perry Creek and St Marys River. Cominco acquired the property and subsequent mapping and sampling (including a 2,700 tonne bulk sample shipped to Trail, BC) was carried out. Cominco held the mineral title for Marysville magnesite for several decades and did not file any assessment reports so there are public access documents for work done by Cominco on the property. A map published in EMPR Annual Report 1964 (pg 187) suggests that Cominco performed considerable stripping and trenching at the north end of the magnesite zone, at an elevation of 4,060 to 4,120 feet (1,237.5 to 1,255.8 m) for a length of about 500 feet (152.4 m) across widths of 50-60 feet (15.24-18.3 m). The main excavation where Cominco removed 2,700 tonnes came from a NE trending pit that is about 160 ft long and 50 ft wide. A total of 4 diamond drill holes appear to have been drilled 50-150 meters west of the trenches. Cominco did not pursue commercial production and the claims eventually lapsed.

The Marysville magnesite property was acquired by Magna Precious and Industrial Minerals Inc and in 2000 the property was optioned by Stralak Res Inc. It was announced that the main purpose of the property acquisition was for the production of magnesium chloride, considered to be suitable for the replacement of road salt with magnesium chloride. Stralak Res did not file any assessment work.

In 2008, D Fredlund performed prospecting on 125 hectares and filed an assessment report (AR 30,075). One sample was reported taken from the north portion of the claims and was analyzed by ALS Minerals and returned values of 41.9% MgO, 7.39% SiO<sub>2</sub>, 0.39% Al<sub>2</sub>O<sub>3</sub>, 1.48% Fe<sub>2</sub>O<sub>3</sub>, 0.36% CaO. Conclusions of work done indicated that further work is recommended. The claims were allowed to lapse and MGX Minerals Inc has acquired the south portion of the Marysville magnesite zone.

In 2015, MGX Minerals Inc performed sampling and mapping in the north and central area of the property (fieldwork in 2017 focused on the south extension). Results from the 2015 rock chip samples are listed as follows:

SAMPLE DESCRIPTION	Al2O3 %	BaO %	CaO %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %	P2O5 %	SO3 %	SiO2 %	TiO2 %	Total %	LOI 1000 %
MARY-15-AR-1	0.47	0.02	1.02	1.04	0.04	40.7	0.03	0.07	0.11	0.01	11.63	0.03	100.45	45.28
MARY-15-AR-2	0.88	0.02	0.94	0.67	0.06	44.8	0.01	0.07	0.14	0.02	3.53	0.04	100.35	49.14
MARY-15-AR-3	0.67	0.01	0.56	1.8	0.03	44.3	0.03	0.07	0.08	<0.01	2.91	0.03	100.1	49.58
MARY-15-AR-4	1.1	0.01	0.62	0.81	0.19	44.9	0.01	0.09	0.08	<0.01	3.2	0.06	100.5	49.42
MARY-15-AR-5	0.6	0.01	0.56	0.92	0.06	45	0.02	0.07	0.08	0.01	2.7	0.02	100.05	49.99
MARY-15-AR-6	1.03	0.01	1.01	1.07	0.04	42.7	0.02	0.06	0.19	<0.01	6.9	0.04	100.2	47.1

In 2017, MGX Minerals Inc carried out geochemical rock sampling of the South Zone (near Antwerp Creek canyon), and the following list details location and whole rock geochemical analysis of rock chips from magnesite outcrop and float. Results from Marysville South Zone are listed as follows:

Sample ID	Zone name	Easting NAD 83	Northing NAD 83	Elev (m)	Type
17Mary-1	Main Zone South	573564	5490871	1160	outcrop
17Mary-2	Main Zone South	573584	5491625	1183	outcrop
17Mary-3	Main Zone South	573615	5490639	1188	outcrop
17Mary-4	Main Zone South	573697	5491899	1241	outcrop
17Mary-5	Main Zone South	573723	5491938	1251	outcrop
17Mary-6	Main Zone South	573758	5491983	1276	outcrop
17Mary-7	Main Zone South	573295	5490521	1177	float
17Mary-8	Main Zone South	573184	5490743	1220	float

Sample ID	Al2O3%	CaO%	Fe2O3%	K2O%	MgO%	Na2O%	P2O5%	SO3%	SiO2%	TiO2%	Total%	LOI%
17Mary-1	0.65	0.61	2.12	0.05	42.4	0.14	0.11	<0.01	6.48	0.04	99.97	47.3
17Mary-2	0.65	0.54	2.43	0.06	43.8	0.14	0.11	<0.01	3.96	0.03	100.4	48.6
17Mary-3	0.81	0.95	0.53	0.24	45	0.15	0.06	<0.01	1.89	0.06	99.89	50.14
17Mary-4	0.7	0.57	0.88	0.13	45	0.15	0.03	<0.01	2.78	0.04	99.99	49.66
17Mary-5	1.29	0.8	0.47	0.03	44.2	0.14	0.04	<0.01	4.95	0.05	99.61	47.6
17Mary-6	1.08	0.87	0.66	0.07	45.8	0.15	0.08	<0.01	2.26	0.05	100.45	49.37
17Mary-7	0.96	0.99	0.84	0.02	44.3	0.15	0.09	0.01	5.93	0.05	100.05	46.66
17Mary-8	0.77	0.51	0.95	0.03	45	0.14	0.08	<0.01	3.05	0.05	99.72	49.1

## 5.0 Regional Geology

The Marysville Magnesite high purity magnesite deposit is hosted by Lower Cambrian age Cranbrook Formation, part of the Upper Proterozoic to Lower Cambrian Eager and Cranbrook Formations consisting of various lithologies including slate, siltstone, limestone, argillite, and magnesite. The magnesite layers occur in the upper part of the Cranbrook Formation. The Marysville Magnesite Creek deposit is classified as a stratabound magnesite deposit type that is most likely of a sedimentary origin as a platform carbonate deposition, and recrystallized by a

burial process that has been subjected to Cretaceous (Laramide Orogeny)? low-grade regional metamorphism (200-300 degrees C, and 300-400 MPa pressure).

Lithological units in the area of Marysville Magnesite are described as follows:

### **Lithology Legend**

#### **Upper-Proterozoic-Lower Cambrian**

**H** Eager Fm argillite, clastic sediments

**G** Cranbrook Formation magnesite  
minor serpentine/talc  
(upper portion of F quartzite)

**F** Cranbrook Formation quartzite

#### **Middle Proterozoic Purcell Supergroup**

**E** Purcell lava (basalt, andesite)

**D** Purcell intrusive sills

**C** Siyeh Fm argillite, clastic sediments

**B** Kitchener Formation dolomite

**A** Creston Formation quartzite

Bedrock geology of the area surrounding Marysville Magnesite magnesite occurrence has been mapped by the Geological Survey of Canada (Memoir 76). A description of lithologies are listed as follows:

**Creston Formation:** The oldest rocks in the area consist of Middle Proterozoic light to dark green and grey phyllitic siltstone, siltstone and sericitic quartzite. General attitude of bedding is N to NNE and dip is steep to the east. The Creston Formation has a fault contact with Cambrian Eager Formation to the north.

**Kitchener Formation:** Middle Proterozoic Kitchener Formation consists of dolomite, argillaceous dolomite, calcareous argillite and argillite. The bedding strikes N to NE and dips are steep to the W and NW. Cleavage and dragfolds suggest that beds are overturned and on the east limb of a large scale anticline.

**Siyeh Formation:** Middle Proterozoic Siyeh Formation conformably overlies the Kitchener Formation. Siyeh lithologies include fine grained, light to dark coloured, buff thin-bedded striped argillite,

**Cranbrook Formation:** Lower Cambrian Cranbrook Formation contains mainly quartzite, with interlayered magnesite and siltstone near the top of the section. The quartzites are medium to coarse grained white, pink, pale-green or brown. Quartzite beds vary from massive to 2-4 feet (0.61-1.22 m) thick, to 2-4 inches (5-10 cm) thick and cross-bedding is frequently preserved.

**Eager Formation:** The Lower Cambrian Eager Formation consists of argillite, argillaceous siltstone, minor schist, quartzite, and dolomite. The argillite is dark to light green and black slaty rocks that form thin bedded, well developed flow cleavage, and closely spaced fracture cleavage nearly parallel to bedding.

The Marysville magnesite occurrence is hosted in the upper member of the Lower Cambrian Cranbrook Formation. The magnesite member outcrops over widths of up to 75 meters wide (that includes interbedded quartzite and siltstone) near the east flank of the north-northeast trending ridge. Bedding is interpreted as compositional layering and not metamorphic banding/cleavage. Metamorphic grade is low (greenschist facies) and it is possible to identify compositional layering. The bedding in the magnesite zone trends NNE and dips steeply ENE. A series of NW trending (dextral offset 5-75 m) faults are roughly perpendicular to the magnesite beds.

## **6.0 2018 Field Program**

### **6.1 Scope & Purpose**

2018 geochemical sampling was carried out in order to evaluate mineral potential in a 200 X 500 m area (elongated north-northeast), located in the central portion of Marysville Magnesite property, at 1,50-1,400 meters elevation, in the area where magnesite is partly exposed as sub-crop and outcrop (approximately 700 meters northeast of Antwerp Creek canyon). Previous geochemical rock chip sampling by MGX Minerals in 2015 outlined areas of magnesite in the north portion of the central zone, and due to favourable results from previous sampling of the central zone, the 2018 sampling focused on the southern extension of central magnesite layer.

### **6.2 Methods and Procedures**

A total of 8 rock chip samples (sample ID 18MA 1-8) were taken across 1 meter intervals along exposures of bedrock, and sub-crop in the Marysville central magnesite zones (Fig 5 & 6). A total of 4 of the 8 samples (numbers 17Mary 7 & 8) were taken in areas of no outcrop, but did contain abundant angular sub-crop (suggesting local bedrock source). Rock chip samples were taken with rock hammer and chisel and consist of acorn to walnut sized bedrock pieces for a total weight ranging from 0.86 to 1.56 kgs. Sample material was placed in marked poly ore bags and shipped to ALS Minerals, North Vancouver.

ALS Minerals crushed better than 70% passing a 2 mm screen split and pulverized rock chip samples. A split of 250 grams is pulverized to better than 85% passing a 75 micron screen. The sample pulp is analyzed using ALS Minerals ME-XRF-06 (XRF-26) Li borate flux major oxide whole rock geochemical analytical methods.

### **6.3 Property Geology & Mineralization**

The writer performed fieldwork consisting of geochemical sampling and geological mapping on the south portion of Marysville magnesite. Fieldwork was carried out May 19-21, 2018. Technical work is recorded in this assessment report and reported as MEM Event number 5700125. Geochemical sampling was carried out on exposed surface bedrock located in close

proximity to historic mapped lenses of magnesite. A total of 8 rock chip samples were collected from surface outcrop (samples 18Ma-5 to 8), and as angular float (samples 18Ma-1 to 4). Rock chip samples were analyzed by ALS Minerals, North Vancouver, BC, using Li Borate fusion, whole rock geochemical analysis.

Sample ID	Zone name	Easting NAD 83	Northing NAD 83	Elev (m)	Type	Lithology
18MA-1	Central Zone	574702	5493292	1340	sub-crop	sparry magnesite
18MA-2	Central Zone	574613	5493179	1363	sub-crop	sparry magnesite
18MA-3	Central Zone	574567	5493143	1379	sub-crop	sparry magnesite
18MA-4	Central Zone	574537	5493078	1374	sub-crop	sparry magnesite
18MA-5	Central Zone	574507	5493042	1383	outcrop	sparry magnesite
18MA-6	Central Zone	574490	5492995	1386	outcrop	sparry magnesite
18MA-7	Central Zone	574469	5492941	1389	outcrop	sparry magnesite
18MA-8	Central Zone	574558	5492908	1390	outcrop	sparry magnesite

Sample ID	Alteration	Mineralization	Comments	Bed Strike	Bed Dip	Width (cm)
18MA-1	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-2	weak qtz stringers, sweats <1 mm	magnesite	Nearby outcrop	33	66 NW	
18MA-3	weak qtz stringers, sweats <1 mm	magnesite	Nearby outcrop	35	68 NW	
18MA-4	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-5	weak qtz stringers, sweats <1 mm	magnesite	outcrop	35	72 NW	100
18MA-6	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	70 NW	100
18MA-7	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	54 NW	100
18MA-8	weak qtz stringers, sweats <1 mm	magnesite	outcrop	31	57 NW	100

Sample ID	Al2O3%	BaO%	CaO%	Fe2O3%	K2O%	MgO%	MnO%	Na2O%
18MA-1	1.12	<0.01	0.83	0.59	0.01	44.9	0.01	0.1
18MA-2	0.87	<0.01	1.06	0.48	0.21	41.9	0.01	0.1
18MA-3	0.83	<0.01	1.04	0.5	0.19	41.8	0.01	0.09
18MA-4	1.04	<0.01	1.42	0.82	0.01	43	0.01	0.09
18MA-5	1.01	<0.01	1.26	0.76	0.04	43.3	0.01	0.09
18MA-6	0.98	<0.01	1.16	0.79	0.01	43.8	0.01	0.09
18MA-7	0.87	<0.01	1.06	0.69	0.03	43.9	0.01	0.09
18MA-8	1	<0.01	1.22	0.81	0.02	42.6	0.01	0.09
average	0.96		1.13	0.68				

Sample ID	P2O5%	SO3%	SiO2%	TiO2%	Total%	LOI%	MgO%/Total%
18MA-1	0.07	0.02	2.98	0.04	99.6	48.93	45.08
18MA-2	0.12	0.02	8.39	0.05	99.53	46.32	42.1
18MA-3	0.11	0.01	8.48	0.06	99.44	46.32	42.04
18MA-4	0.44	0.02	5.58	0.04	99.53	47.06	43.2
18MA-5	0.33	0.01	5.31	0.05	99.64	47.47	43.46
18MA-6	0.26	0.02	4.41	0.04	99.52	47.95	44.01
18MA-7	0.15	0.02	3.93	0.04	99.42	48.63	44.16
18MA-8	0.32	0.02	6.31	0.04	99.36	46.92	42.87
			5.67			average	43.37

The relatively high MgO content (42.4-45.8% MgO) compares favourably with other magnesite producers such as Baymag property near Radium Hot Springs, BC (NOTE: pure magnesite is about 47.6% MgO). Impurity compounds of interest (Al<sub>2</sub>O<sub>3</sub>, CaO) approach specifications required for producing deadburn, calcined and fused magnesia. The relatively high SiO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> may require beneficiation in order to remove iron-bearing mineral impurities (e.g. siderite). Based on the range of %MgO and impurities Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, CaO, Fe<sub>2</sub>O<sub>3</sub>, detailed mapping and geochemical sampling is recommended in order to test the extent and purity of the Marysville magnesite, leading to metallurgical testing for suitability for use as a raw material for refractories in the steel industry as well as other industrial end uses such as agricultural, fire retardant, and/or specialized moisture/mold resistant filler, MgCl (road salt). MGX is planning further evaluation of commercial applications for Marysville magnesite as well as geochemical analysis of rock samples in order to determine grade and distribution of Marysville Magnesite.

In the central portion of Marysville magnesite there appears to be NNE trending, steeply west dipping layer approximately 400 meters in strike length, and in the range of 3-15 meters width of magnesite mineralization that represents a significant drill target. The southern zone of magnesite located near the boundary of MTO tenures 1033194 and 1029860 represents a similar magnesite zone that has better access for drilling, however the central zone could be developed as a secondary drill target.



## 7.0 Discussion of Results

The Marysville mineral property contains layers and lenses of high purity magnesite hosted in the Cranbrook Formation. Geological mapping identified stratbound magnesite layers and lenses that striking north-northeast and dipping steeply northwest. The dominant structure appears to be steeply dipping, NE trending strata and sub-vertically oriented late-stage, cross faults generally striking northwest. The magnesite member of the Cranbrook Formation quartzite is extensive throughout the local area as lenses along a 6 kilometer strike length.

Based on the range of % MgO and impurities Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, CaO, Fe<sub>2</sub>O<sub>3</sub>, detailed mapping and geochemical sampling is recommended in order to test the extent and purity of the Marysville magnesite, leading to metallurgical testing for suitability for use as a raw material for refractories in the steel industry as well as other industrial end uses such as agricultural, fire retardant, and/or specialized moisture/mold resistant filler, MgCl (road salt). MGX is planning further evaluation of commercial applications for Marysville magnesite as well as geochemical analysis of rock samples in order to determine grade and distribution of Marysville South Zone magnesite.

Marysville magnesite is a significant magnesite resource, and the 'Southern Zone' offers a drill target along 600 meters strike length in the area where the widest magnesite zones are located near the boundary of MTO tenures 1033194 and 1029860. The central zone (MTO tenures 1036819, & 1053039) host several isolated magnesite occurrences and it is possible that some of these lenses are offset by late stage NW trending, steeply dipping faults, and represent a secondary drill target as well as the southern zone (MTO tenures 1033194 and 1029860).

## 8.0 Conclusion

Reviewing available data, the writer offers the following interpretations & conclusions:

- The Marysville magnesite compares favourably in size with other deposits in BC e.g. Baymag, Driftwood.
- Access to the property is relatively good with a reasonable access road connecting Marysville Magnesite to Cranbrook and Kimberley.
- There is good infrastructure in the form of a paved highway, CPR spur line and powerline all of which are located approximately 10 kilometres east of the property.
- Lower Cambrian Cranbrook Formation sandstone, clastic and carbonate sedimentary sequence has been subjected to regional metamorphism (heat and pressure from deep burial during Cretaceous orogeny events, and subsequent erosion) has resulted in recrystallization of the sediments into magnesite, slate, marble and other metamorphic equivalents.
- Marysville property has exposed Cranbrook Formation magnesite bearing magnesite lithology along a segmented ridge crest that strikes north-northeast and dips steeply. Magnesite exposed near the crest of the ridge is accessible by a network of trails developed by Cominco in 1960's.
- High purity magnesite has been mapped over a strike length of 6,000 metres and a maximum width of about 15 meters. Impure (interbedded quartzite/siltstone) magnesite occurs as 20-60 m wide layers that are parallel to high purity lenses.

## **9.0 Recommendations**

Future exploration and development of Marysville Magnesite should be focused on defining the extensions of known magnesite formations of the South & Central Zones. In order to outline zones of high purity magnesite, geochemical data should be collected from the South & Central Zones. Based on new data interpretation and geochemical results, core drilling in the central and south portion of the property is recommended. In addition to drilling, a program of metallurgical testing (bulk sampling), for use in various end products is recommended.

## **10.0 References**

EMPR Annual Report 1937-A25, 1941-78, 1959-176, 1961-150, 1964-187

EMPR Bulletin 76, p 77

EMPR Open File 1987-13 1988-14

EMPR Property File, Oct 27, 1994

GSC Map 396A, 15-1957, 11-1960

GSC Memoir 76

GSC Summary Report 1932, Part AII

Henderson, G. G. L. (1954): Geology of the Stanford Range of the Rocky Mountains. EMPR Bulletin 35. pp.24-25, Figure 2

Leech, G. B. (1954): Canal Flats, British Columbia, GSC Paper 54-7, pp.18-19

## CERTIFICATE AND DATE

I, Andris Kikauka, of 4199 Highway, Powell River, BC am a self-employed professional geoscientist. I hereby certify that:

1. I am a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980.
2. I am a Fellow in good standing with the Geological Association of Canada.
3. I am registered in the Province of British Columbia as a Professional Geoscientist.
4. I have practiced my profession for thirty five years in precious and base metal exploration in the Cordillera of Western Canada, U.S.A., Mexico, Central America, and South America, as well as for three years in uranium exploration in the Canadian Shield.
5. The information, opinions, and recommendations in this report are based on fieldwork carried out in my presence on the subject property during which time a technical evaluation consisting of rock geochemical sampling carried during May, 2018
6. I have a direct interest in MGX Minerals Inc. The recommendations in this report are intended to serve as general guidelines and cannot be used for the purpose of public financing.
7. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. This technical work report supports requirements of BCEMPR for Exploration and Development Work/Expiry Date Change.

Andris Kikauka, P. Geo.,

A handwritten signature in black ink that reads "A. Kikauka". The signature is written in a cursive style with a large initial "A" and a long, sweeping underline.

June 20, 2018

**ITEMIZED COST STATEMENT-  
MARYSVILLE MINERAL TENURES 1029860, 1033236, 1033194, 1036819, 1044738,  
1047074, 1053039**

**FIELDWORK PERFORMED MAY 19-21, 2018,  
WORK PERFORMED ON MINERAL TENURES 1036819, 1053039  
FORT STEELE MINING DIVISION, NTS 82G 12W (TRIM 082G 051)**

**FIELD CREW:**

**A. Kikauka (Geologist) 3 days (surveying, mapping)      \$    1,575.00**

**FIELD COSTS:**

<b>Mob/demob/preparation</b>	<b>159.98</b>
<b>Meals and accommodations</b>	<b>181.75</b>
<b>Truck mileage &amp; fuel</b>	<b>299.15</b>
<b>Li Borate Fusion ICP AES geochemical analysis (8 rock samples)</b>	<b>391.84</b>
<b>Report</b>	<b>500.00</b>

**Total= \$ 3,107.72**



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**VANCOUVER BC V6Z 2T1**

Page: 1  
 Total # Pages: 2 (A - B)  
 Plus Appendix Pages  
 Finalized Date: 14-JUN-2018  
 Account: MGXMIN

*Appendix A*

**CERTIFICATE VA18127705**

Project: MARYSVILLE

This report is for 8 Rock samples submitted to our lab in Vancouver, BC, Canada on 31-MAY-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA	MGX MINERALS
----------------	--------------

**SAMPLE PREPARATION**

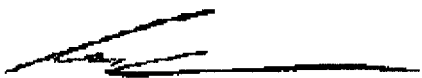
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

**ANALYTICAL PROCEDURES**

ALS CODE	DESCRIPTION	INSTRUMENT
ME-XRF26	Whole Rock By Fusion/XRF	XRF
OA-GRA05x	LOI for XRF	WST-SEQ

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*

**Signature:**   
 Colin Ramshaw, Vancouver Laboratory Manager



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 Total # Pages: 2 (A - B)  
 Plus Appendix Pages  
 Finalized Date: 14-JUN-2018  
 Account: MGXMIN

Project: MARYSVILLE

**CERTIFICATE OF ANALYSIS VA18127705**

Sample Description	Method Analyte Units LOD	WEI-21	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	ME-XRF26	
		Recvd Wt. kg	Al2O3 %	BaO %	CaO %	Cr2O3 %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %	P2O5 %	SO3 %	SiO2 %	SrO %	TiO2 %
		0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
18MA1		1.56	1.12	<0.01	0.83	<0.01	0.59	0.01	44.9	0.01	0.10	0.07	0.02	2.98	<0.01	0.04
18MA2		1.12	0.87	<0.01	1.06	<0.01	0.48	0.21	41.9	0.01	0.10	0.12	0.02	8.39	<0.01	0.05
18MA3		0.88	0.83	<0.01	1.04	<0.01	0.50	0.19	41.8	0.01	0.09	0.11	0.01	8.48	<0.01	0.06
18MA4		1.48	1.04	<0.01	1.42	<0.01	0.82	0.01	43.0	0.01	0.09	0.44	0.02	5.58	<0.01	0.04
18MA5		0.86	1.01	<0.01	1.26	<0.01	0.76	0.04	43.3	0.01	0.09	0.33	0.01	5.31	<0.01	0.05
18MA6		1.42	0.98	<0.01	1.16	<0.01	0.79	0.01	43.8	0.01	0.09	0.26	0.02	4.41	<0.01	0.04
18MA7		1.24	0.87	<0.01	1.06	<0.01	0.69	0.03	43.9	0.01	0.09	0.15	0.02	3.93	<0.01	0.04
18MA8		1.80	1.00	<0.01	1.22	<0.01	0.81	0.02	42.6	0.01	0.09	0.32	0.02	6.31	<0.01	0.04

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*



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Total # Pages: 2 (A - B)  
Plus Appendix Pages  
Finalized Date: 14-JUN-2018  
Account: MGXMIN

Project: MARYSVILLE

**CERTIFICATE OF ANALYSIS VA18127705**

Sample Description	Method Analyte Units LOD	ME-XRF26	OA-GRA05x
		Total %	LOI 1000 %
18MA1		99.60	48.93
18MA2		99.53	46.32
18MA3		99.44	46.32
18MA4		99.53	47.06
18MA5		99.64	47.47
18MA6		99.52	47.95
18MA7		99.42	48.63
18MA8		99.36	46.92

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*



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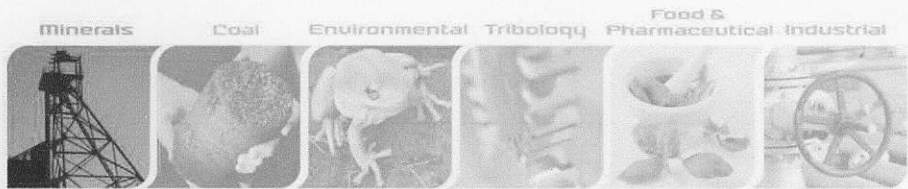
Page: **Appendix 1**  
Total # **Appendix Pages: 1**  
Finalized Date: **14-JUN-2018**  
Account: **MGXMIN**

Project: MARYSVILLE

**CERTIFICATE OF ANALYSIS VA18127705**

<b>CERTIFICATE COMMENTS</b>													
Applies to Method:	<p style="text-align: center;"><b>LABORATORY ADDRESSES</b></p> <p>Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.</p> <table><tr><td>CRU-31</td><td>CRU-QC</td><td>LOG-22</td><td>ME-XRF26</td></tr><tr><td>OA-GRA05x</td><td>PUL-31</td><td>PUL-QC</td><td>SPL-21</td></tr><tr><td>WEI-21</td><td></td><td></td><td></td></tr></table>	CRU-31	CRU-QC	LOG-22	ME-XRF26	OA-GRA05x	PUL-31	PUL-QC	SPL-21	WEI-21			
CRU-31	CRU-QC	LOG-22	ME-XRF26										
OA-GRA05x	PUL-31	PUL-QC	SPL-21										
WEI-21													





## Sample Preparation Package

### PREP-31

### Standard Sample Preparation: Dry, Crush, Split and Pulverize

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

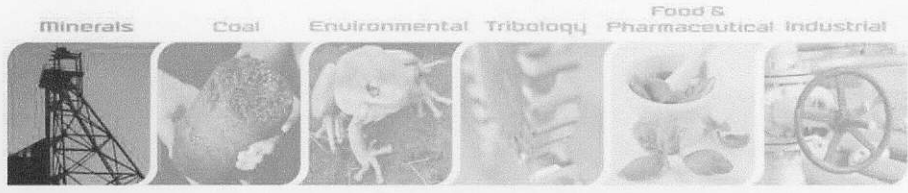
The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

Method Code	Description
LOG-22	Sample is logged in tracking system and a bar code label is attached.
CRU-31	Fine crushing of rock chip and drill samples to better than 70 % of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85 % of the sample passing 75 microns.

Revision 03.03  
March 29, 2012

RIGHT SOLUTIONS RIGHT PARTNER

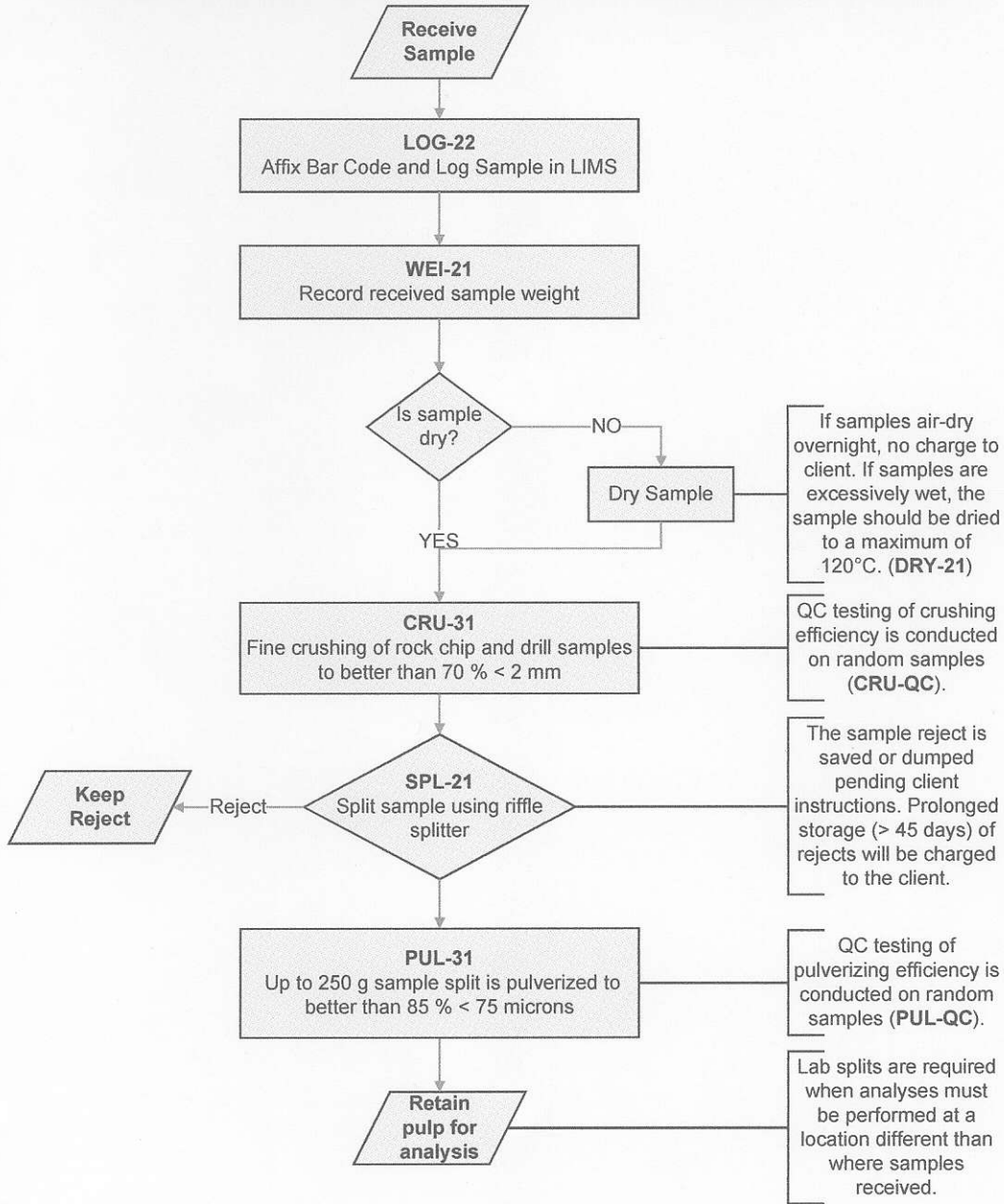
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# Sample Preparation Package

## Flow Chart -

### Sample Preparation Package - PREP-31 Standard Sample Preparation: Dry, Crush, Split and Pulverize



Revision 03.03  
March 29, 2012

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## ME-XRF26 – Silicate / Whole Rock by Fusion / XRF

### Sample Decomposition:

Lithium Borate Fusion (WEI-GRA12b)

### Analytical Method:

X-Ray Fluorescence Spectroscopy (XRF)

A prepared sample (0.66 g) is fused with a 12:22 lithium tetraborate – lithium metaborate flux which also includes an oxidizing agent (Lithium Nitrate), and then poured into a platinum mold. The resultant disk is in turn analyzed by XRF spectrometry.

The XRF analysis is determined in conjunction with a loss-on-ignition at 1000°C. The resulting data from both determinations are combined to produce a “total”.

Analyte	Symbol	Units	Lower Limit	Upper Limit
Aluminium	Al <sub>2</sub> O <sub>3</sub>	%	0.01	100
Barium	BaO	%	0.01	66
Calcium	CaO	%	0.01	60
Chromium	Cr <sub>2</sub> O <sub>3</sub>	%	0.01	10
Iron	Fe <sub>2</sub> O <sub>3</sub>	%	0.01	100
Potassium	K <sub>2</sub> O	%	0.01	15
Magnesium	MgO	%	0.01	50
Manganese	MnO	%	0.01	39
Sodium	Na <sub>2</sub> O	%	0.01	10
Phosphorus	P <sub>2</sub> O <sub>5</sub>	%	0.01	46
Sulphur	SO <sub>3</sub>	%	0.01	34
Silicon	SiO <sub>2</sub>	%	0.01	100
Strontium	SrO	%	0.01	1.5
Titanium	TiO <sub>2</sub>	%	0.01	30
Total	Total	%	0.01	110

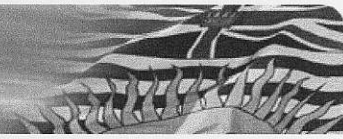
## Appendix B - Rock Chip Sample Descriptions & Geochemistry

Sample ID	Zone name	Easting NAD 83	Northing NAD 83	Elev (m)	Type	Lithology
18MA-1	Central Zone	574702	5493292	1340	sub-crop	sparry magnesite
18MA-2	Central Zone	574613	5493179	1363	sub-crop	sparry magnesite
18MA-3	Central Zone	574567	5493143	1379	sub-crop	sparry magnesite
18MA-4	Central Zone	574537	5493078	1374	sub-crop	sparry magnesite
18MA-5	Central Zone	574507	5493042	1383	outcrop	sparry magnesite
18MA-6	Central Zone	574490	5492995	1386	outcrop	sparry magnesite
18MA-7	Central Zone	574469	5492941	1389	outcrop	sparry magnesite
18MA-8	Central Zone	574458	5492908	1390	outcrop	sparry magnesite

Sample ID	Alteration	Mineralization	Comments	Bed Strike	Bed Dip	Width (cm)
18MA-1	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-2	weak qtz stringers, sweats <1 mm	magnesite	outcrop (nearby)	33	66 NW	
18MA-3	weak qtz stringers, sweats <1 mm	magnesite	outcrop (nearby)	35	68 NW	
18MA-4	weak qtz stringers, sweats <1 mm	magnesite	angular float			
18MA-5	weak qtz stringers, sweats <1 mm	magnesite	outcrop	35	72 NW	100
18MA-6	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	70 NW	100
18MA-7	weak qtz stringers, sweats <1 mm	magnesite	outcrop	30	54 NW	100
18MA-8	weak qtz stringers, sweats <1 mm	magnesite	outcrop	31	57 NW	100

Sample ID	Al <sub>2</sub> O <sub>3</sub> %	BaO%	CaO%	Fe <sub>2</sub> O <sub>3</sub> %	K <sub>2</sub> O%	MgO%	MnO%	Na <sub>2</sub> O%
18MA-1	1.12	<0.01	0.83	0.59	0.01	44.9	0.01	0.1
18MA-2	0.87	<0.01	1.06	0.48	0.21	41.9	0.01	0.1
18MA-3	0.83	<0.01	1.04	0.5	0.19	41.8	0.01	0.09
18MA-4	1.04	<0.01	1.42	0.82	0.01	43	0.01	0.09
18MA-5	1.01	<0.01	1.26	0.76	0.04	43.3	0.01	0.09
18MA-6	0.98	<0.01	1.16	0.79	0.01	43.8	0.01	0.09
18MA-7	0.87	<0.01	1.06	0.69	0.03	43.9	0.01	0.09
18MA-8	1	<0.01	1.22	0.81	0.02	42.6	0.01	0.09
average	0.96		1.13	0.68				

Sample ID	P <sub>2</sub> O <sub>5</sub> %	SO <sub>3</sub> %	SiO <sub>2</sub> %	TiO <sub>2</sub> %	Total%	LOI%	MgO%/Total%
18MA-1	0.07	0.02	2.98	0.04	99.6	48.93	45.08
18MA-2	0.12	0.02	8.39	0.05	99.53	46.32	42.1
18MA-3	0.11	0.01	8.48	0.06	99.44	46.32	42.04
18MA-4	0.44	0.02	5.58	0.04	99.53	47.06	43.2
18MA-5	0.33	0.01	5.31	0.05	99.64	47.47	43.46
18MA-6	0.26	0.02	4.41	0.04	99.52	47.95	44.01
18MA-7	0.15	0.02	3.93	0.04	99.42	48.63	44.16
18MA-8	0.32	0.02	6.31	0.04	99.36	46.92	42.87
average			5.67			average	43.37


[MINFILE Home page](#) | [ARIS Home page](#) | [MINFILE Search page](#) | [Property File Search](#)
**MINFILE Record Summary**  
**MINFILE No 082GNW005**
*Appendix C*
[XML Extract](#)
  -- SELECT REPORT --  New Window  
 File Created: 24-Jul-85 by BC Geological Survey (BCGS)  
 Last Edit: 20-Apr-08 by Mandy N. Desautels(MND)

**SUMMARY**

Summary Help

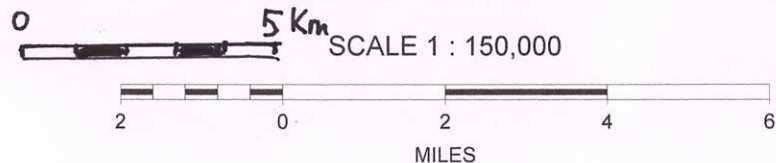
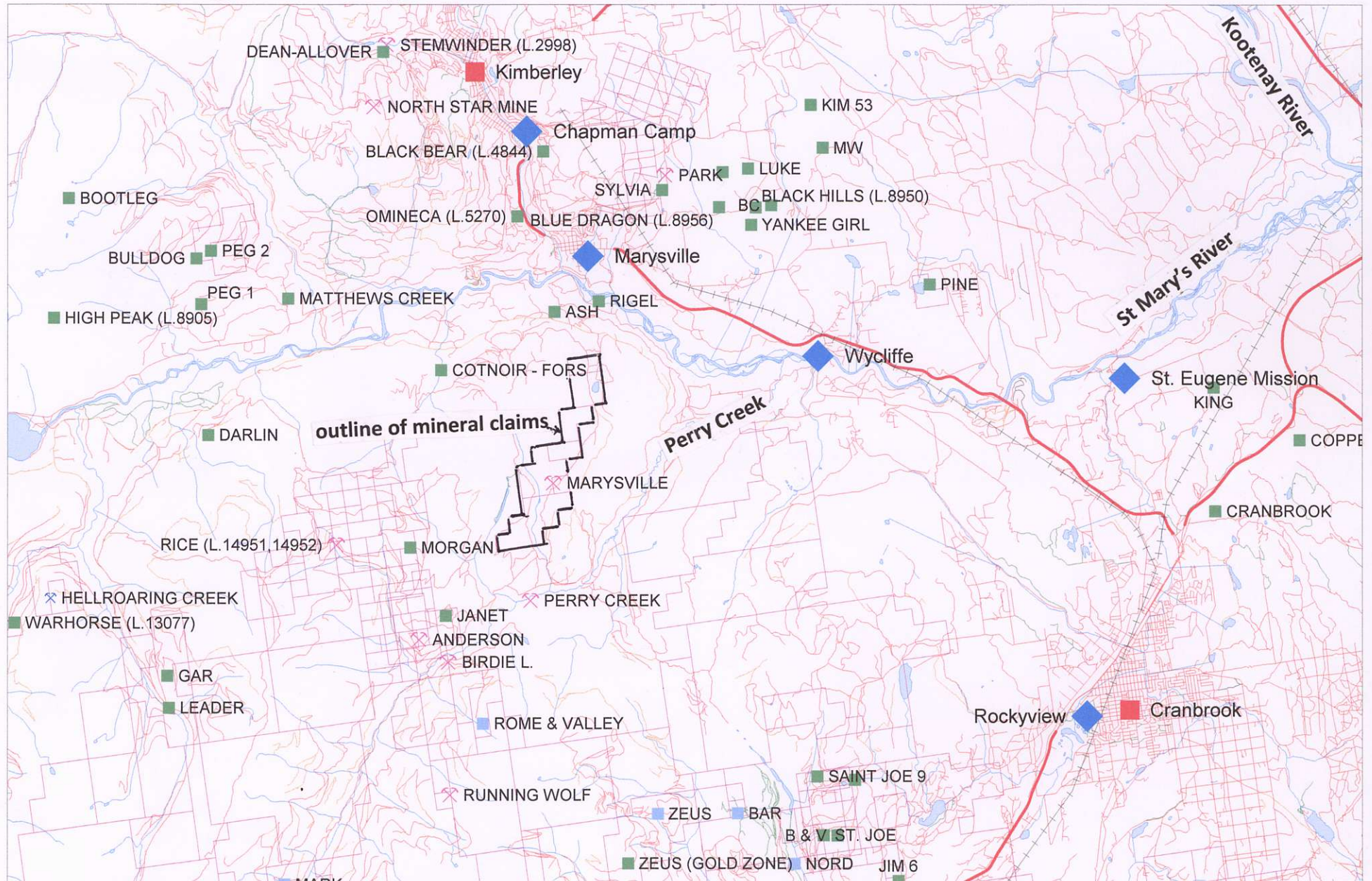
<b>Name</b>	MARYSVILLE, PERRY CREEK	<b>NMI</b>	082G12 Mg1
<b>Status</b>	Past Producer	<b>Mining Division</b>	Fort Steele
<b>Latitude</b>	49° 34' 40" N	<b>BCGS Map</b>	082G051
<b>Longitude</b>	115° 58' 33" W	<b>NTS Map</b>	082G12W
<b>Commodities</b>	Magnesite	<b>UTM</b>	11 (NAD 83)
<b>Tectonic Belt</b>	Omineca	<b>Northing</b>	5492192
		<b>Easting</b>	574039
		<b>Deposit Types</b>	E09 : Sparry magnesite
		<b>Terrane</b>	Ancestral North America

**Capsule Geology** Magnesite forms a bed which is conformably interbedded with quartzites of the Lower Cambrian Cranbrook Formation. It is underlain by a sequence of thinly banded, reddish quartzitic and buff magnesite beds and is overlain by magnesite interstratified with thin, greenish argillite beds and locally thin limestone. It varies from coarse to finely crystalline, weathers rough and commonly has a rusty brown surface. Fresh surfaces are pearly grey, white or cream-coloured and are cut by minor quartz veins or host to knots of quartz. The best bed of magnesite is about 15 metres thick and samples indicate the following chemistry: 4.54 per cent SiO<sub>2</sub>, 2.4 per cent Fe<sub>2</sub>O<sub>3</sub>, 0.4 per cent Al<sub>2</sub>O<sub>3</sub>, 0.79 per cent CaO, 43.7 per cent MgO and 48 per cent Loss On Ignition.

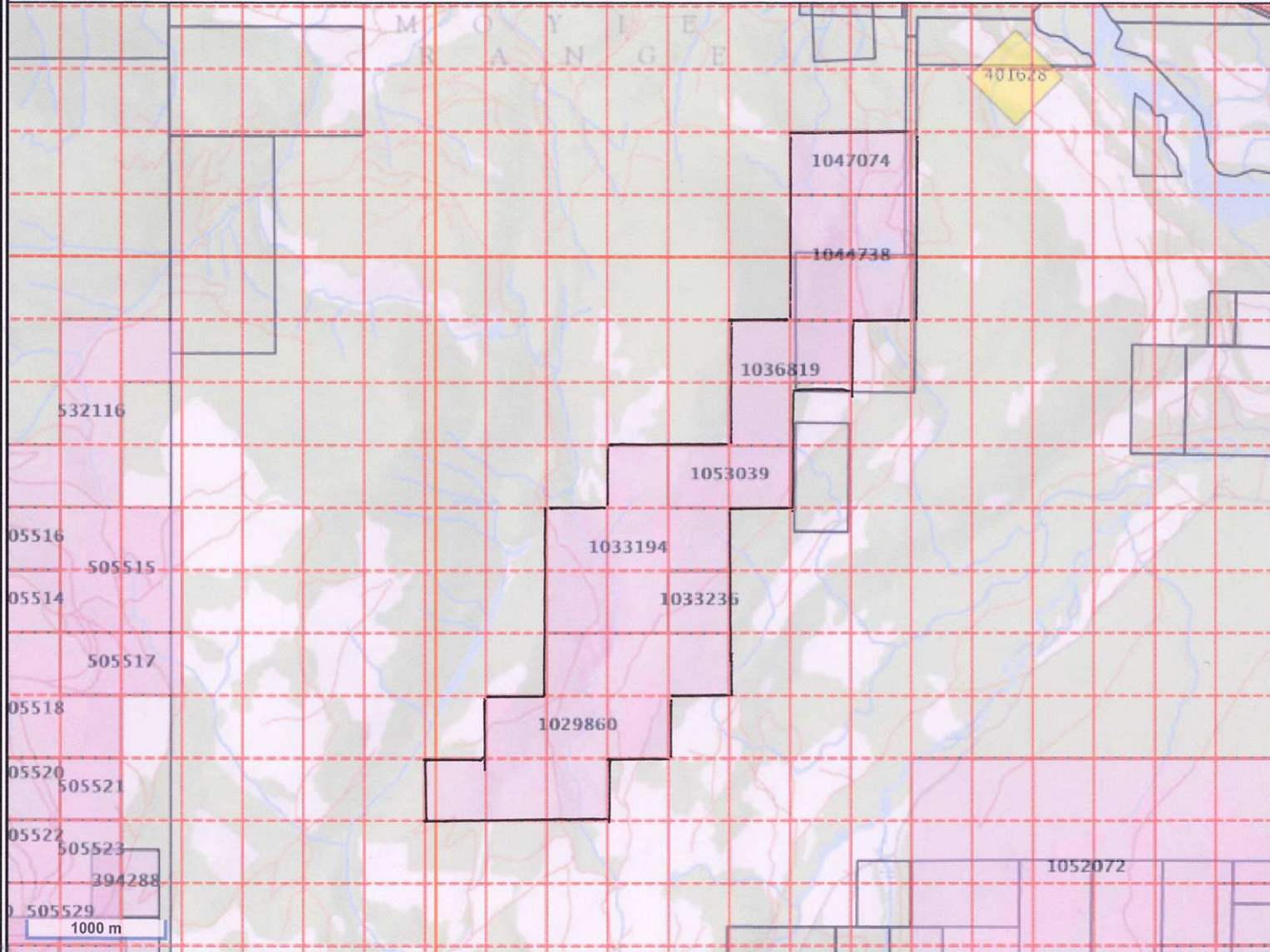
Minor production has been reported for the Marysville deposit (Z.D. Hora, personal communication, 1990), but no figures are available.

**Bibliography** EMPR AR 1937-A25; \*1941-78; 1947-219; \*1959-176; 1961-150; \*1964-187  
 EMPR BULL 76 p. 77  
 EMPR OF 1987-13; \*1988-14  
 EMPR PF (Letter and graph from Richard B. Berg to Kirk Hancock, October 27, 1994)  
 GSC MAP 396A; 15-1957; 11-1960  
 GSC MEM 76; \*207, pp. 18,56  
 GSC SUM RPT 1932, Part AII, p. 101  
 WWW [http://www.infomine.com/index/properties/FORT\\_STEELE.html](http://www.infomine.com/index/properties/FORT_STEELE.html)

# Fig 1 Marysville Magnesite General Location



# Fig 2 MTO Claim Location



## Legend

### Mineral Titles (MTO)

- MTO Grid
- Title (current)
  - LEASE
  - CLAIM
- Reserves
  - No Registration
  - Conditional
  - Heritage/Historic Site
- Crown Land Layers (Tantalis)
  - Land Act Survey Parcels - Tantalis - Legal Descriptions
    - Label Text
  - Land Act Survey Parcels - Tantalis - Outlined
- Administrative Boundaries
  - Federal Transfer Lands - Outlined
  - Federal Transfer Lands - Colour Filled
  - National Parks - Outlined
  - National Park
  - National Parks - Colour Filled
  - Conservancy Areas - Tantalis - Colour Filled
  - Conservancy Areas
  - Ecological Reserves - Tantalis - Colour Filled

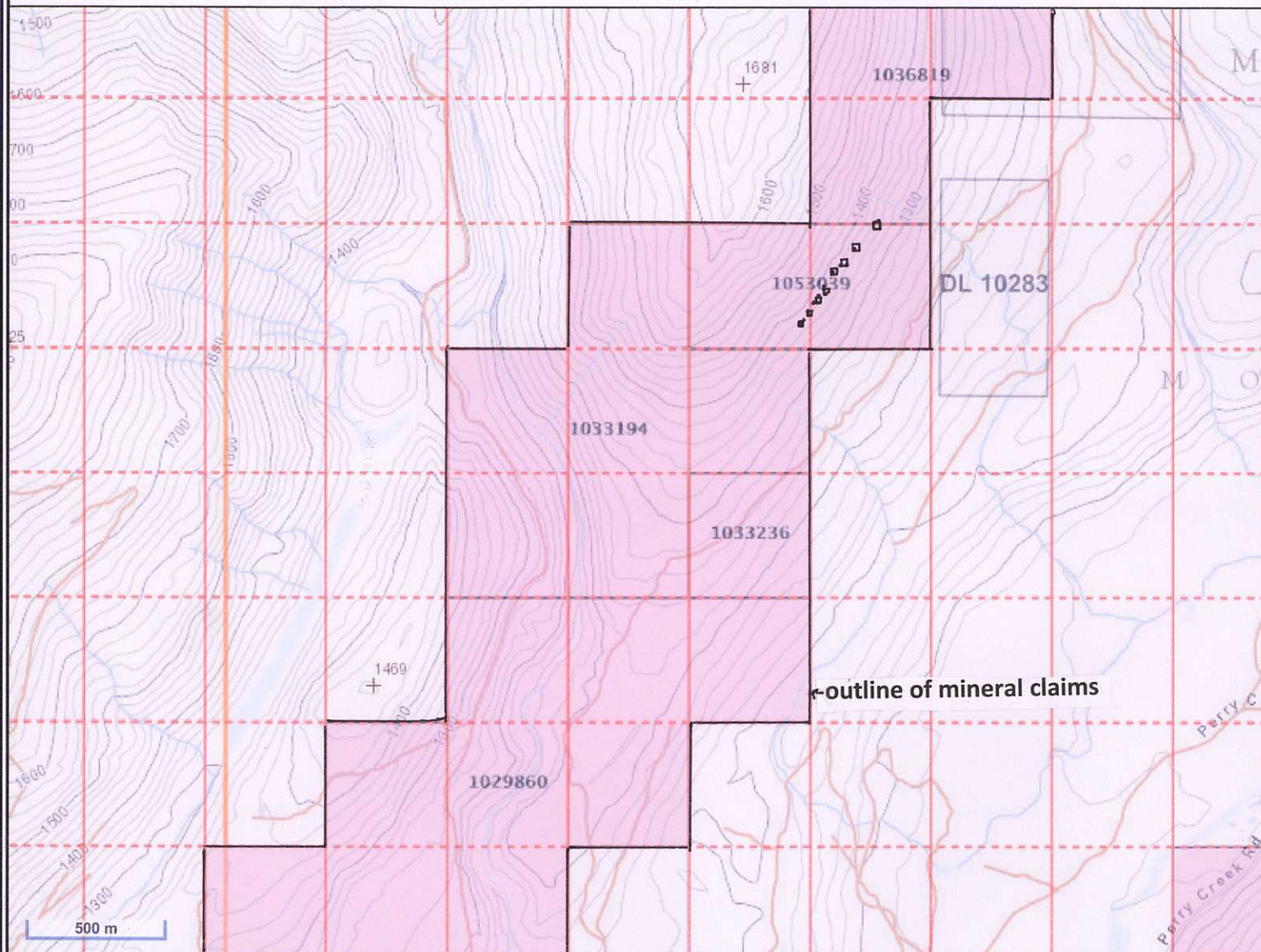
*This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
THIS MAP IS NOT TO BE USED FOR NAVIGATION.*

Printed using the Mineral Titles Online (MTO) application.

**Center:** 49°35'7", -115°58'43"  
**Scale:** 1 : 67710  
**SRS:** EPSG:3857  
**UTM Zone:** 11



# Fig 3 MTO Claim Detail Map



## Legend

### Mineral Titles (MTO)

MTO Grid

Title (current)

LEASE

CLAIM

Reserves

No Registration

Conditional

Heritage/Historic Site

### Crown Land Layers (Tantalis)

Land Act Survey Parcels - Tantalis - Legal Descriptions

Label Text

Land Act Survey Parcels - Tantalis - Outlined

### Administrative Boundaries

Federal Transfer Lands - Outlined

Federal Transfer Lands - Colour Filled

National Parks - Outlined

National Park

National Parks - Colour Filled

Conservancy Areas - Tantalis - Colour Filled

Conservancy Areas

Ecological Reserves - Tantalis - Colour Filled

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Printed using the Mineral Titles Online (MTO) application.

**NTS 082G 12/W, BCGS 082G.051, Fort Steele Mining Division**

• **Rock Chip Sample (2018)**

**Center:** 49°34'44", -115°58'43"

**Scale:** 1 : 33855

**SRS:** EPSG:3857

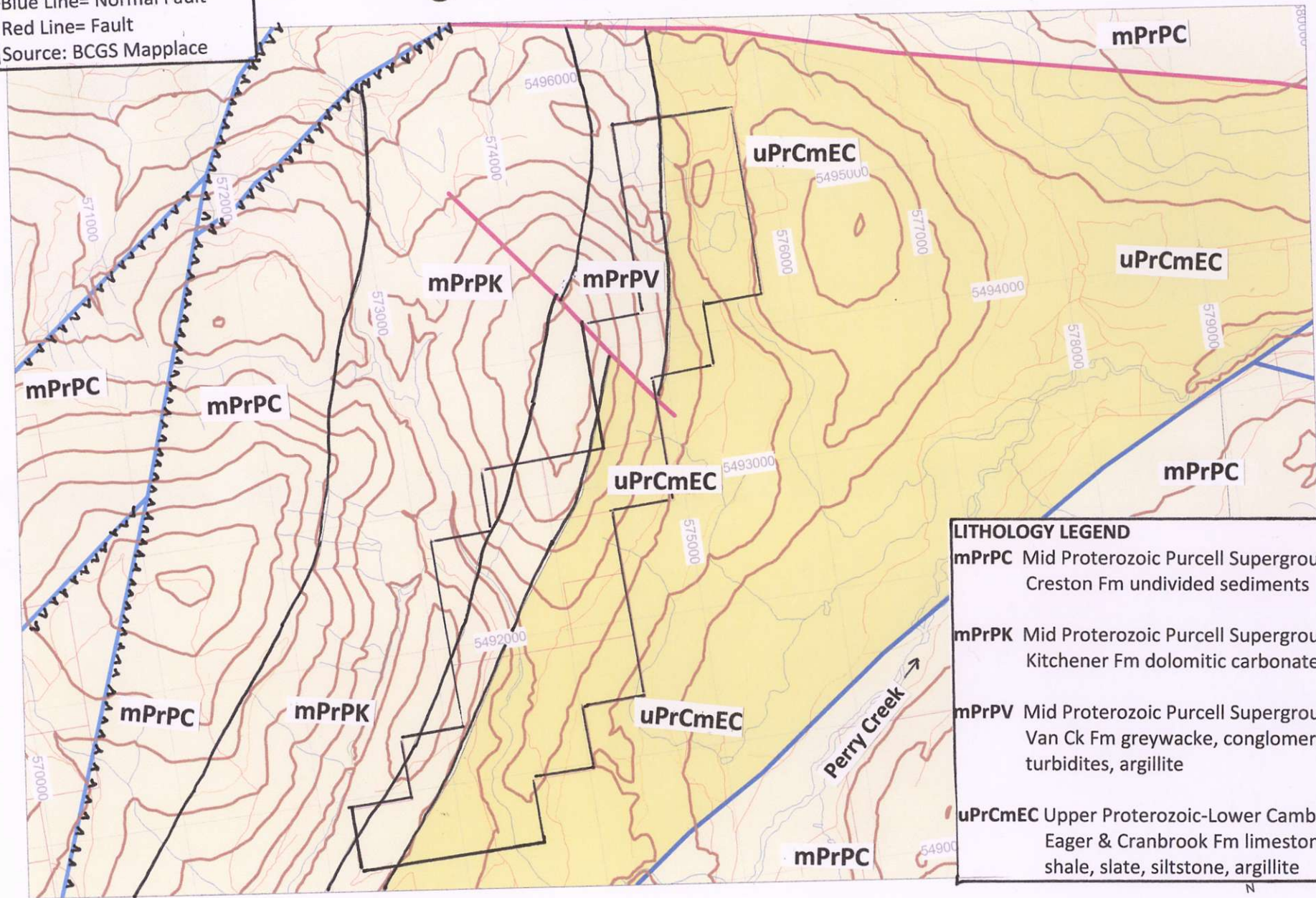
**UTM Zone:** 11





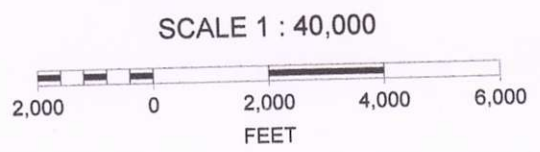
# Fig 4 General Geology

Turquoise Line= Thrust Fault  
 Blue Line= Normal Fault  
 Red Line= Fault  
 Source: BCGS Mapplace

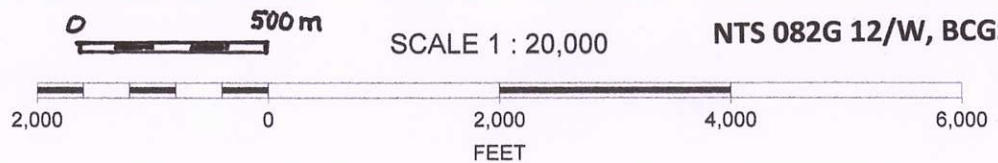
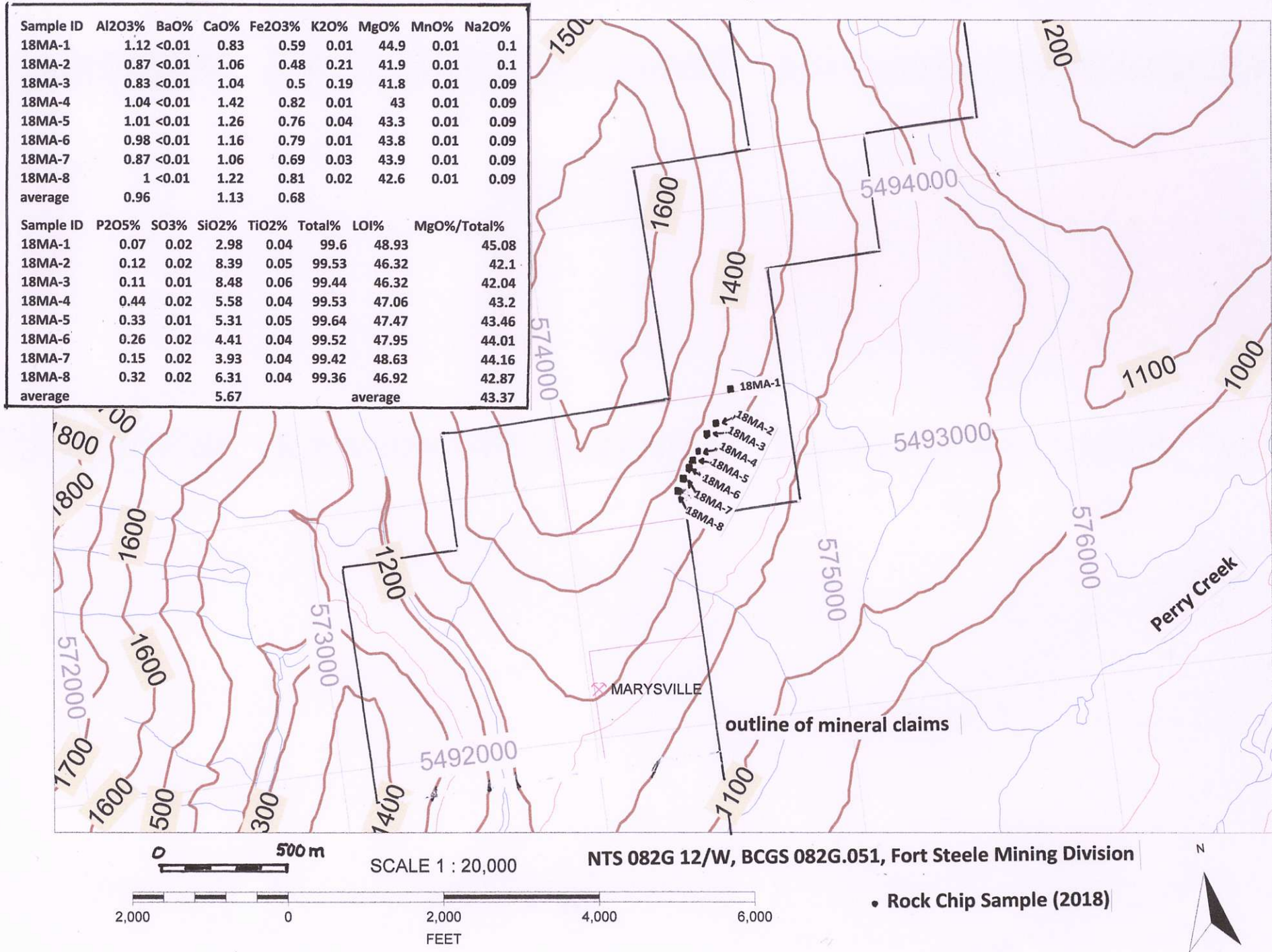


**LITHOLOGY LEGEND**

<b>mPrPC</b>	Mid Proterozoic Purcell Supergroup Creston Fm undivided sediments
<b>mPrPK</b>	Mid Proterozoic Purcell Supergroup Kitchener Fm dolomitic carbonate
<b>mPrPV</b>	Mid Proterozoic Purcell Supergroup Van Ck Fm greywacke, conglomerate turbidites, argillite
<b>uPrCmEC</b>	Upper Proterozoic-Lower Cambrian Eager & Cranbrook Fm limestone, shale, slate, siltstone, argillite



# Fig 5 Marysville Rock Sample Locations 2018



NTS 082G 12/W, BCGS 082G.051, Fort Steele Mining Division

• Rock Chip Sample (2018)

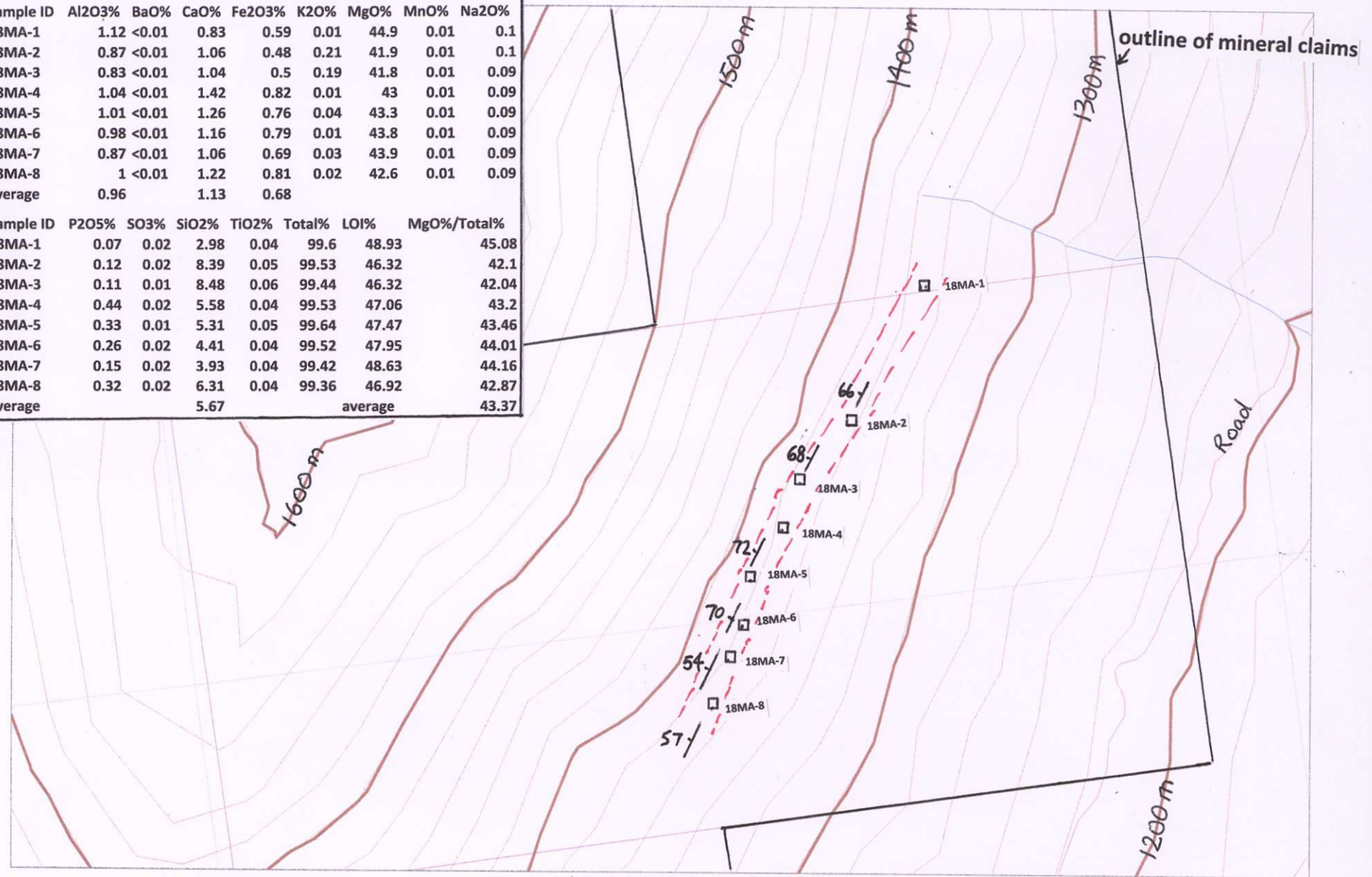


# Fig 6 Marysville Rock Sample Geochemistry

Sample ID	Al2O3%	BaO%	CaO%	Fe2O3%	K2O%	MgO%	MnO%	Na2O%
18MA-1	1.12	<0.01	0.83	0.59	0.01	44.9	0.01	0.1
18MA-2	0.87	<0.01	1.06	0.48	0.21	41.9	0.01	0.1
18MA-3	0.83	<0.01	1.04	0.5	0.19	41.8	0.01	0.09
18MA-4	1.04	<0.01	1.42	0.82	0.01	43	0.01	0.09
18MA-5	1.01	<0.01	1.26	0.76	0.04	43.3	0.01	0.09
18MA-6	0.98	<0.01	1.16	0.79	0.01	43.8	0.01	0.09
18MA-7	0.87	<0.01	1.06	0.69	0.03	43.9	0.01	0.09
18MA-8	1	<0.01	1.22	0.81	0.02	42.6	0.01	0.09
average	0.96		1.13	0.68				

Sample ID	P2O5%	SO3%	SiO2%	TiO2%	Total%	LOI%	MgO%/Total%
18MA-1	0.07	0.02	2.98	0.04	99.6	48.93	45.08
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18MA-3	0.11	0.01	8.48	0.06	99.44	46.32	42.04
18MA-4	0.44	0.02	5.58	0.04	99.53	47.06	43.2
18MA-5	0.33	0.01	5.31	0.05	99.64	47.47	43.46
18MA-6	0.26	0.02	4.41	0.04	99.52	47.95	44.01
18MA-7	0.15	0.02	3.93	0.04	99.42	48.63	44.16
18MA-8	0.32	0.02	6.31	0.04	99.36	46.92	42.87
average			5.67			average	43.37



SCALE 1 : 5,000

NTS 082G 12/W, BCGS 082G.051, Fort Steele Mining Division




- Rock Chip Sample
- Surface Trace Magnesite
- ↙ Bedding & dip



# Fig 7 Rock Samples

Rock Chip Sample (2018)

## Legend

 Rock Chip Sample

