



ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Tulsequah Project 2015: BB11092 Lithogeochemical Re-Sampling

TOTAL COST: \$5,857.53

AUTHOR(S): B. Armstrong,
SIGNATURE(S): B. Armstrong

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):
Mx-1-355 Issued 22nd August 2013, Approval # 13-1650242-0822;

STATEMENT OF WORK EVENT NUMBER(S)/DATE(S) : 5580728; 2015/dec/04

YEAR OF WORK: 2015

PROPERTY NAME: Big Bull

CLAIM NAME(S) (on which work was done): 513820

COMMODITIES SOUGHT: Au, Ag, Cu, Pb, Zn

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 104K 008

MINING DIVISION: Atlin

NTS / BCGS: 104K/12

LATITUDE: 58° 39' 56"

LONGITUDE: 133° 32' 51" (at centre of work)

UTM Zone: NAD83 8N EASTING: 584,250 NORTHING: 6,503,750

OWNER(S): Chieftain Metals Inc.

MAILING ADDRESS: 2 Bloor Street West, Suite 2510, Toronto, Ontario, M4W 3E2

OPERATOR(S) [who paid for the work]: Chieftain Metals Inc.

MAILING ADDRESS: 2 Bloor Street West, Suite 2510, Toronto, Ontario, M4W 3E2

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)

Stikine Assemblage, Mt. Eaton Suite, island arc volcanic, limestone, Devono-Mississippian, Permian, Llewellyn Fault, Chief Fault, Chief Cross Fault, Mount Eaton Anticline, quartz sericite pyrite alteration, polymetallic volcanogenic massive sulphide, Kuroko type, Tulsequah Chief, Big Bull, Lithogeochemistry.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

8933; 9825; 11018; 17054; 17137; 19453; 20423; 20901; 23762; 23763; 23951; 24183; 24188; 27385; 27659; 31030; 33468; 33482; 34358; 34969; 35093.

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock	10 Samples	513820	\$5,857.53
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Mineral Resource			
Mineral Reserve			
Metallurgical			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other			
		TOTAL COST	\$5,857.53

**Tulsequah Project 2015:
BB11092 Lithogeochemical Re-Sampling**

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

Work performed: October 15–16th 2015

On mineral claims: 513820

Statement of Work Event Number: 5580728; 2015/dec/04

B. D. Armstrong P.Geo

Report Submitted December 4th, 2015

SUMMARY

The Tulsequah Chief Project is a development stage polymetallic volcanogenic massive sulphide (VMS) project situated in Northwestern British Columbia 100 km south of Atlin, B.C. and 64 km northeast of Juneau, Alaska. The Tulsequah property is 100% owned by Chieftain Metals Inc. and covers 32688ha including 38 Mineral Claims and 25 Crown Granted Mineral claims. The property includes the past producing Tulsequah Chief and Big Bull mines, and a number of earlier stage prospects.

The Tulsequah Chief deposit was discovered in 1923 and the nearby Big Bull deposit was discovered in 1929. Cominco Ltd. acquired the properties in 1946 and operated the Tulsequah Chief mine from 1951-1957, mining 575,463 tonnes at a grade of 3.43g/t Au, 108 g/t Ag, 1.8% Cu, 1.3% Pb and 6.7% Zn; and the Big Bull Deposit from 1951-1955, mining 360,463 tonnes at a grade of 5.14g/t Au, 154.29 g/t Ag, 1.2% Cu, 1.9% Pb and 7.3% Zn.

In the 1980's Cominco re-commenced exploration on the property using the new volcanogenic hosted massive sulphide 'Kuroko' genetic model, rather than hydrothermal veins or replacement models. Cominco conducted surface mapping and geophysical surveys and entered into a joint venture with Redfern Resources Ltd, commencing diamond drilling in 1987. Seasonal drilling and surface programs continued until 1992 when Redfern purchased Cominco's remaining 60% interest and assumed the site legacy environmental remediation obligations. Redfern continued to develop the property and completed a positive feasibility study by Rescan in 1995. No technical work was conducted between 1994 and 2002

Redfern re-commenced exploration in 2003, with a significant drill program in 2004 to update the 1995 resource to the current NI43-101 criteria. Subsequent resources were published by AMEC in 2005 and reserves by Wardrop in 2007 with a positive feasibility study using river access from Juneau. Redfern commenced mine development in 2008 with the construction of 19km of exploration road, an air strip and 2 camp facilities. In early 2009 Redfern notified it's creditors it would not be able to fulfill it's financial obligation and they placed it into receivership.

Chieftain Metals acquired the property from the receiver in October 2011 and initiated transfer of Redfern's permits and began consultation with the Taku River Tlingit First Nation. Chieftain executed a 31,000m drilling program in 2011 which was successful in increasing the indicated resources and published in the 2012 JDS Energy and Mining Feasibility Study(Doerksen 2012). This study used a processing rate of 2,000tpd with concentrate and supplies transported on proposed new 125km access road connecting to the provincial road network at Atlin BC.

In May 2014 Chieftain commissioned JDS Energy and Mining to carry out an optimized and revised feasibility study of the Tulsequah Chief project. Proposing a lower processing rate of 1,100tpd and the use of conventional barging to transport concentrate and supplies. As part of the optimization the resource and reserve cutoff grades were increased from the 2012 mineral resource, to compensate for the reduced mill throughput.

This report discusses Lithogeochemical analysis, interpretation of chemostratigraphy and mass changes calculation from 10 samples in drillhole BB11092, collected and analyzed in October 2015.

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1. INTRODUCTION

The Tulsequah Chief deposit is an advanced stage polymetallic massive sulphide deposit, located in northern British Columbia, Canada. The deposit is located on the banks of the Tulsequah River 100 kilometres south of the town of Atlin. The Big Bull deposits is satellite to Tulsequah Chief, located 10km south and connect by a 15km mineral exploration road.

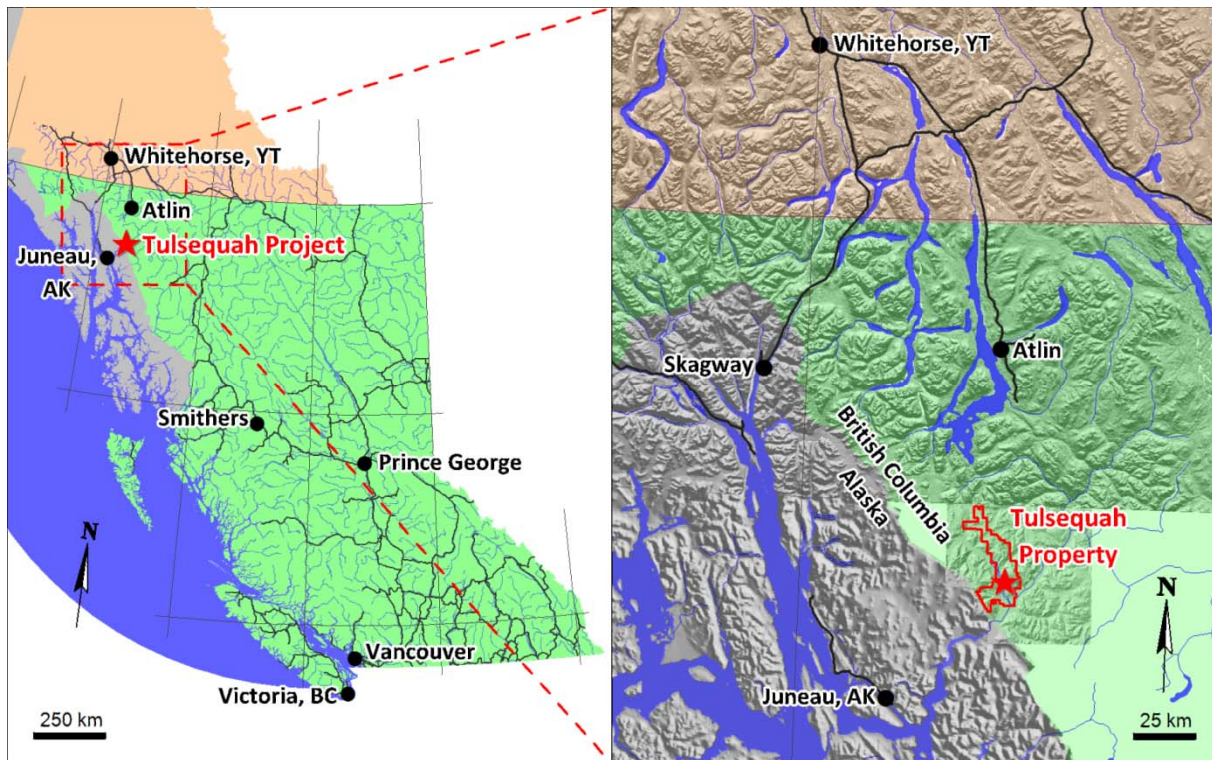
This reports documents Chieftain Metals Inc. 2015 Exploration Program with lithogeochemical re-sampling of diamond drillhole BB11092, with total eligible exploration expenditures of \$5,857.53 (Statement of Work Event Number 5580728, December 4th, 2015). Drill hole BB11092 is located exclusively on mineral claim 513820, held by Chieftain Metals Inc.

Property, history and geology information was well summarized in the recent assessment reports by Armstrong 2012a and 2012b, and the reader is referred to these reports.

2. PROPERTY DESCRIPTION AND LOCATION

The Tulsequah property is situated along the Tulsequah River in northwestern B.C. centered on latitude 58°43' N and longitude 133°35' W (NTS 104K/12 and 104K/13, Figure 2.1.) The property is accessible by air from Atlin BC 100 km to the north, from Whitehorse YT 230 km to the north, or from Juneau Alaska 64 km to the southwest.

Figure 2.1: Tulsequah Property Location



The Tulsequah Property comprises 38 mineral cell claims totaling 32,688ha (Table 2.1 and Figure 2.2) and 25 crown granted mineral claims totaling 438.69 ha (Table 2.2) The property is owned 100% by Chieftain Metals Inc.

With acceptance of this report all mineral claims will be in good standing until the good to dates listed in Table 2.1. The July 1, 2012 revisions to the Mineral Tenure Act Regulations reset the zero anniversary of all current claims, to that date. The expenditure requirement to maintain claims in good standing is: \$5 per hectare of exploration work per year to extend the good to dates for years 1-2; \$10 per hectare for the years 3-4; \$15 per hectare for years 5-6; and \$20 per hectare for all subsequent years; upto a maximum of 10 years. Crown granted claims are maintained through the payment of annual taxes on July 2rd each year. The crown granted claims at Tulsequah have been legally surveyed.

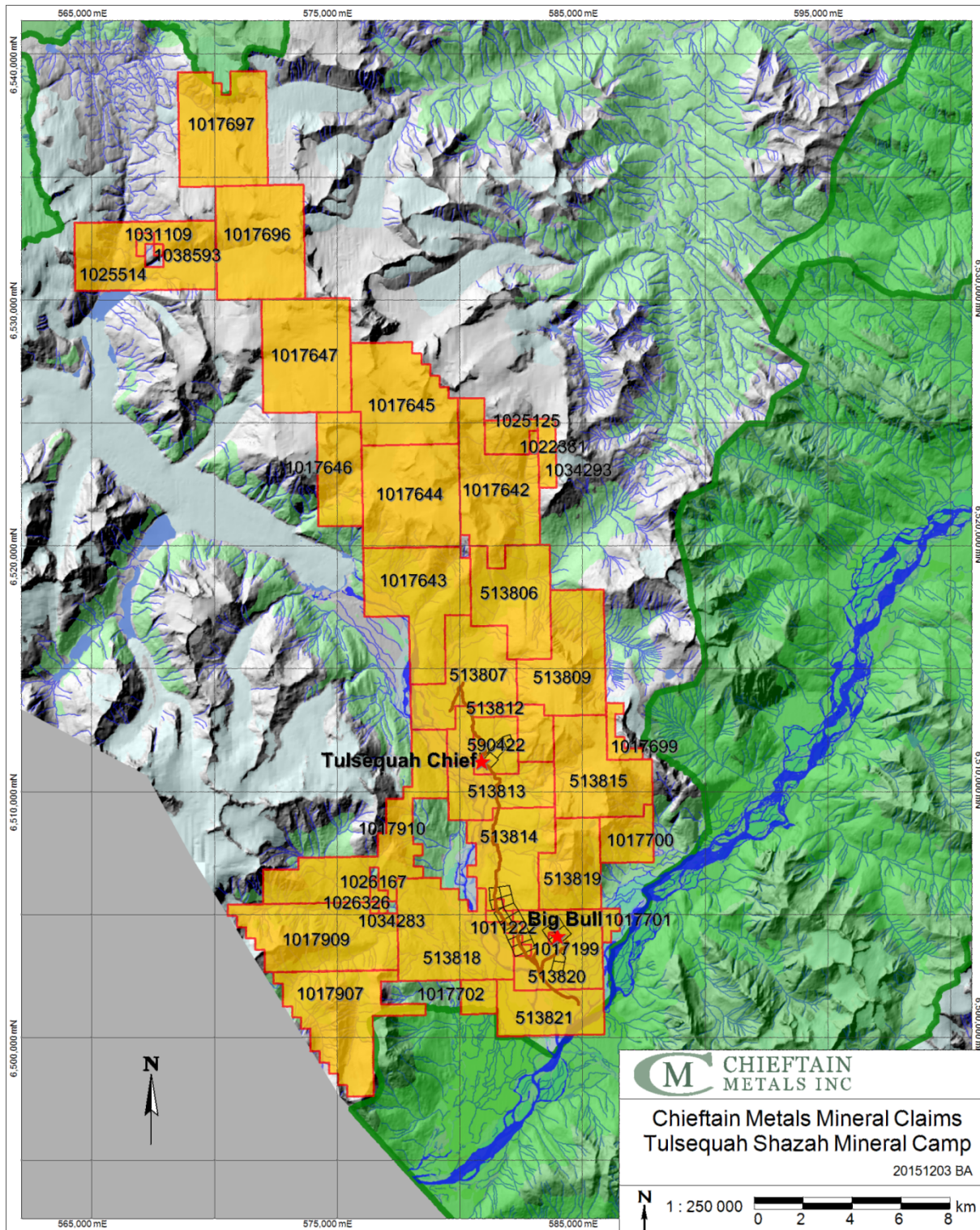
Table 2.1: Mineral Tenure Cell Claims

Tenure Number	Claim Name	Owner	Tenure Type	Tenure Sub Type	Area (ha)	Good To Date
513806		248384 (100%)	Mineral	Claim	1241.30	31-Dec-22
513807		248384 (100%)	Mineral	Claim	1242.29	31-Dec-22
513809		248384 (100%)	Mineral	Claim	1393.21	31-Dec-22
513812		248384 (100%)	Mineral	Claim	621.53	31-Dec-22
513813		248384 (100%)	Mineral	Claim	806.77	31-Dec-22
513814		248384 (100%)	Mineral	Claim	1160.49	31-Dec-22
513815		248384 (100%)	Mineral	Claim	1310.80	31-Dec-22
513818		248384 (100%)	Mineral	Claim	1615.84	31-Dec-22
513819		248384 (100%)	Mineral	Claim	841.08	31-Dec-22
513820		248384 (100%)	Mineral	Claim	1094.34	31-Dec-22
513821		248384 (100%)	Mineral	Claim	842.32	31-Dec-22
590422		248384 (100%)	Mineral	Claim	420.00	31-Dec-23
1011222	Banker	248384 (100%)	Mineral	Claim	151.48	10-Nov-17
1017199	Big Bull	248384 (100%)	Mineral	Claim	16.83	10-Nov-17
1017642	STAPLER1	248384 (100%)	Mineral	Claim	1507.93	10-Nov-17
1017643	STAPLER2	248384 (100%)	Mineral	Claim	1593.55	10-Nov-17
1017644	STAPLER3	248384 (100%)	Mineral	Claim	1658.84	10-Nov-17
1017645	STAPLER4	248384 (100%)	Mineral	Claim	1506.43	10-Nov-17
1017646		248384 (100%)	Mineral	Claim	837.54	10-Nov-17
1017647	STAPLER6	248384 (100%)	Mineral	Claim	1673.04	10-Nov-17
1017696	STAPLER7	248384 (100%)	Mineral	Claim	1670.96	10-Nov-17
1017697	STAPLER8	248384 (100%)	Mineral	Claim	1618.92	10-Nov-17
1017699		248384 (100%)	Mineral	Claim	167.99	10-Nov-17
1017700		248384 (100%)	Mineral	Claim	420.40	10-Nov-17
1017701		248384 (100%)	Mineral	Claim	84.16	10-Nov-17
1017702		248384 (100%)	Mineral	Claim	202.11	10-Nov-17
1017907	STRONG1	248384 (100%)	Mineral	Claim	1532.82	10-Nov-17
1017909	STRONG2	248384 (100%)	Mineral	Claim	1632.61	10-Nov-17
1017910	STRONG3	248384 (100%)	Mineral	Claim	1681.59	10-Nov-17
1022381	ICE FALL 2	248384 (100%)	Mineral	Claim	33.49	10-Nov-17
1025125	ICE FALL	248384 (100%)	Mineral	Claim	267.92	10-Nov-17
1025514	MAPLE LEAF	248384 (100%)	Mineral	Claim	1487.42	10-Nov-17
1026167	SOUTH SLOPE	248384 (100%)	Mineral	Claim	50.47	10-Nov-17
1026326	SB1	248384 (100%)	Mineral	Claim	16.83	10-Nov-17
1031109	ML1	248384 (100%)	Mineral	Claim	50.13	10-Nov-17
1034283	SBE	248384 (100%)	Mineral	Claim	16.827	10-Nov-17
1034293	STOKER2	248384 (100%)	Mineral	Claim	200.979	10-Nov-17
1038593	ML2	248384 (100%)	Mineral	Claim	16.7111	10-Nov-17
Total				38	32,687.95	

Table 2.2: Crown Granted Mineral Claims

Claim Name	Record	Units	Area (Ha)	Expiry Date
Tulsequah Chief Crown Grants				
Tulsequah Bonanza	5668	1	20.9	July 3, 2016
River Fr.	5669	1	7.99	July 3, 2016
Tulsequah Chief	5670	1	20.9	July 3, 2016
Tulsequah Bald Eagle	5676	1	14.16	July 3, 2016
Tulsequah Elva Fr.	5679	1	9.7	July 3, 2016
Big Bull Crown Grants				
Big Bull	6303	1	20.65	July 3, 2016
Bull No. 1	6304	1	16.95	July 3, 2016
Bull No. 6	6305	1	17.22	July 3, 2016
Bull No. 5	6306	1	14.57	July 3, 2016
Jean	6307	1	17.02	July 3, 2016
Hugh	6308	1	20.71	July 3, 2016
Banker Crown Grants				
Vega No. 1	6155	1	20.9	July 3, 2016
Vega No. 2	6156	1	17.62	July 3, 2016
Vega No. 3	6157	1	18.97	July 3, 2016
Vega No. 4	6158	1	19.85	July 3, 2016
Vega No. 5	6159	1	14.94	July 3, 2016
Janet W. No. 1	6160	1	18.95	July 3, 2016
Janet W. No. 2	6161	1	18.75	July 3, 2016
Janet W. No. 3	6162	1	16.6	July 3, 2016
Janet W. No. 4	6163	1	20.76	July 3, 2016
Janet W. No. 5	6164	1	18.2	July 3, 2016
Janet W. No. 6	6165	1	19.02	July 3, 2016
Janet W. No. 7	6166	1	18.78	July 3, 2016
Janet W. No. 8	6167	1	17.98	July 3, 2016
Joker	6169	1	16.6	July 3, 2016
Total		25	438.69	

Figure 2.2: Chieftain Metals Mineral Tenure Claims



3. ACCESSIBILITY, LOCAL RESOURCES, INFRASTRUCTURE, CLIMATE AND PHYSIOGRAPHY

The Tulsequah Chief property is accessible only by air or water. The most direct access is by charter fixed wing or helicopter from Atlin BC or Whitehorse YT to the Shazah Camp airstrip. The Shazah gravel airstrip is 1,030m long, situated on the eastern side of the Tulsequah River just north of the confluence with Shazah Creek. The airstrip was constructed in 2008 and is utilized mostly by chartered Cessna 207 and Shorts Sky Van aircraft from Atlin, but has accommodated aircraft as large as De Havilland Buffalo.

Conventional water access using the Taku River is possible with shallow draft vessels from Juneau to Chieftain's barge landing site on the Taku River, 1.6km NE of the confluence with the Tulsequah River. This transportation method is seasonally limited May to October with higher water flows during the spring freshet in early Summer and extended rainfall periods in the Fall.

Site roads include the 19 km gravel exploration access road from the Barge Landing to the Shazah Camp via the Tulsequah Chief Mine completed in November 2008 by Redfern. A spur road 2km north of the Barge Landing continues 3km to the Big Bull mine site, the last 400m is unfinished and passable only with all-terrain vehicles.

The 32,688ha property is roughly an area of 40km north-north west and 7km east-west extending from the confluence of the Tulsequah and Taku Rivers in the south, to the Atlin Provincial Park in the north. Topographic elevations on the property range from 50m at river level to over 1800m at the top of Mount Eaton. The Tulsequah and Taku River valleys are glacial in origin with broad flat floodplains, several kilometers wide, and moderate to steep valley walls. The north of the property is heavily glaciated with the Tulsequah River originating at the toe of the Tulsequah Glacier, immediately west of the Property. Coarse glaciofluvial sands, gravels and cobbles fill the Tulsequah valley with little vegetative cover. The Tulsequah River is noted for annual jökulhlaup glacial outburst flood events.

The climate at Tulsequah is typical of inland areas of the north coast of BC. It is characterized by high precipitation and generally moderate winter temperatures due to the influence of the Pacific ocean. The closest towns for which climate data are available are Juneau, Alaska and Atlin, BC. At the river level, snow cover typically lasts from mid-November to early May. Vegetation ranges from wet coastal rain forest with thick canopy at the lower elevations to dense sub-alpine scrub at the higher elevations. Two major ice fields; Mount Eaton and Manville, cover approximately 15% of the present property area.

4. HISTORY

Drillhole BB11092 was drilled by Chieftain Metals Inc, during the 2011 exploration program. With the core being re-sampled by Chieftain in October 2015 and the analysis and interpretation included in this report.

The exploration history of the project was recently summarized by Armstrong 2012a and 2012b, and the current mineral resource and reserve in Makarenko et al 2014, the reader is referred to these reports.

5. GEOLOGICAL SETTING AND MINERALIZATION

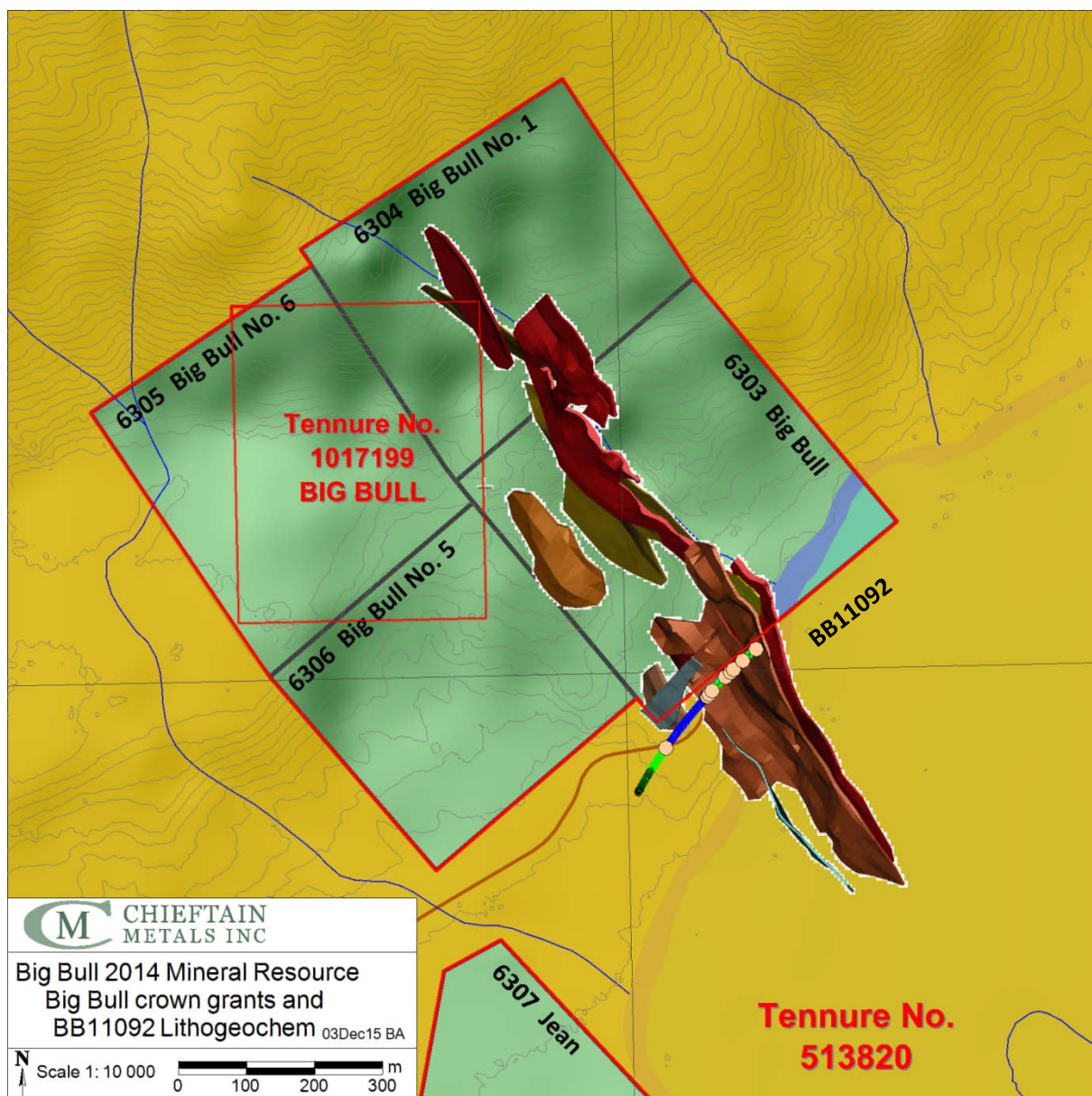
Geological Setting of the Tulsequah Chief area is well understood with the regional geology mapped by Milalynuk et al 1994, and deposit geology well summarized by Armstrong 2012a, 2012b, and Makarenko 2014 and the reader is referred to these reports.

6. INTERPRETATION AND CONCLUSIONS

Drillhole BB11092 was selected for 10 lithogeochemical samples to determine the changes in chemostratigraphy and alteration intensity with mass change methods. The location of the drillhole and lithogeochemical sample locations can be seen in Figure 6.1: The drillhole was logged as felsic rhyolite flows in the top of the drillhole and dacite lapilli tuff and tuff units at the bottom. There are several intensely altered quartz sericite intervals completely overprinting the original rock textures making the correct visual determination impossible. The chemostratigraphy will determine the position of volcanic units within the developed Big Bull stratigraphy.

Assay results are in Appendix I; sample core photos in Appendix II; BB11092 drill log in Appendix III.

Figure 6.1: Drillhole BB11092 Lithogeochemical sample locations & Mineral Claims



6.2 BB11092 CHEMOSTRATIGRPHY

The Chemostratigraphy rock type groups were identified using immobile-element methods and classification defined by Redfern (Barrett 2006). All the samples from drillhole BB11092 correspond to the 'rhyolite B' composition with transitional magmatic affinity, two samples at 322.1 and 333.5 do have higher Zr/Y ratios. The results of the classification are in Table 6.1:

Since all rocks sample in BB11092 show the same original rhyolite B composition no stratigraphic sequence can be determined. But rhyolite B has previously been observed at Tulsequah Chief (Barrett 2006) to have consisted entirely of volcanoclastic debris in the form of debris flows, tuffs and it is possible that these felsic rocks are not 'pure' primary compositions, but represent variable mixtures between dominantly rhyolite A material and minor amounts of mafic to andesitic material derived from the footwall sequence. But also at Tulsequah Chief the rhyolite B in the deeper mine levels maintains a relatively uniform immobile-element composition and may be a primary composition.

Table 6.1: BB11092 Chemostratigraphy Rock Group classifications

	Chemostratigraphy Group	Magmatic Affinity	Chemical Features
140.5	Rhyolite B	Transitional	
312.62	Rhyolite B	Transitional	
314.1	Rhyolite B	Transitional	
322.1	Rhyolite B	Transitional	High Zr/Y
333.5	Rhyolite B	Transitional	High Zr/Y
385	Rhyolite B	Transitional	
402.3	Rhyolite B	Transitional	
412.92	Rhyolite B	Transitional	
446.3	Rhyolite B	Transitional	
491.55	Rhyolite B	Transitional	

Figure 6.2: Big Bull Chemostratigraphy Rock Group Definitions plot1: $Zr/TiO_2:Al_2O_3/TiO_2$

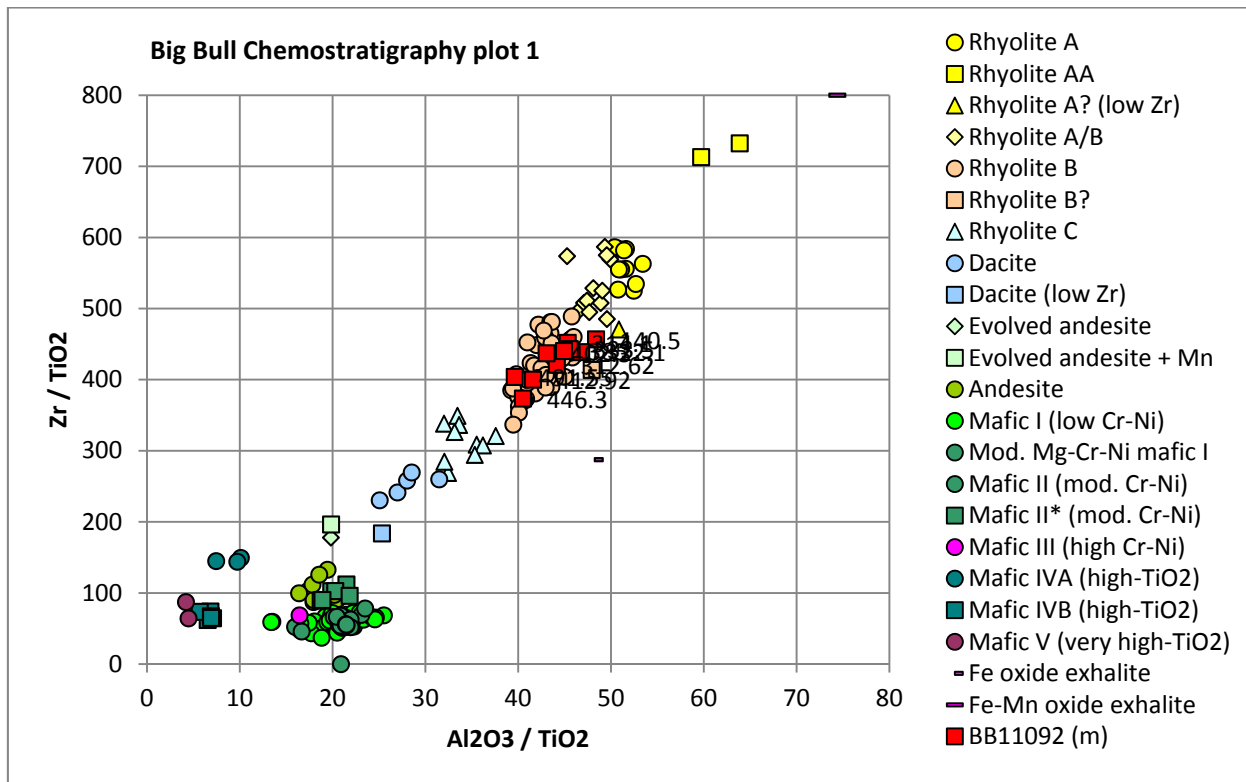


Figure 6.3: Big Bull Chemostratigraphy Rock Group Definitions plot2: $Zr/Al_2O_3:Al_2O_3/TiO_2$

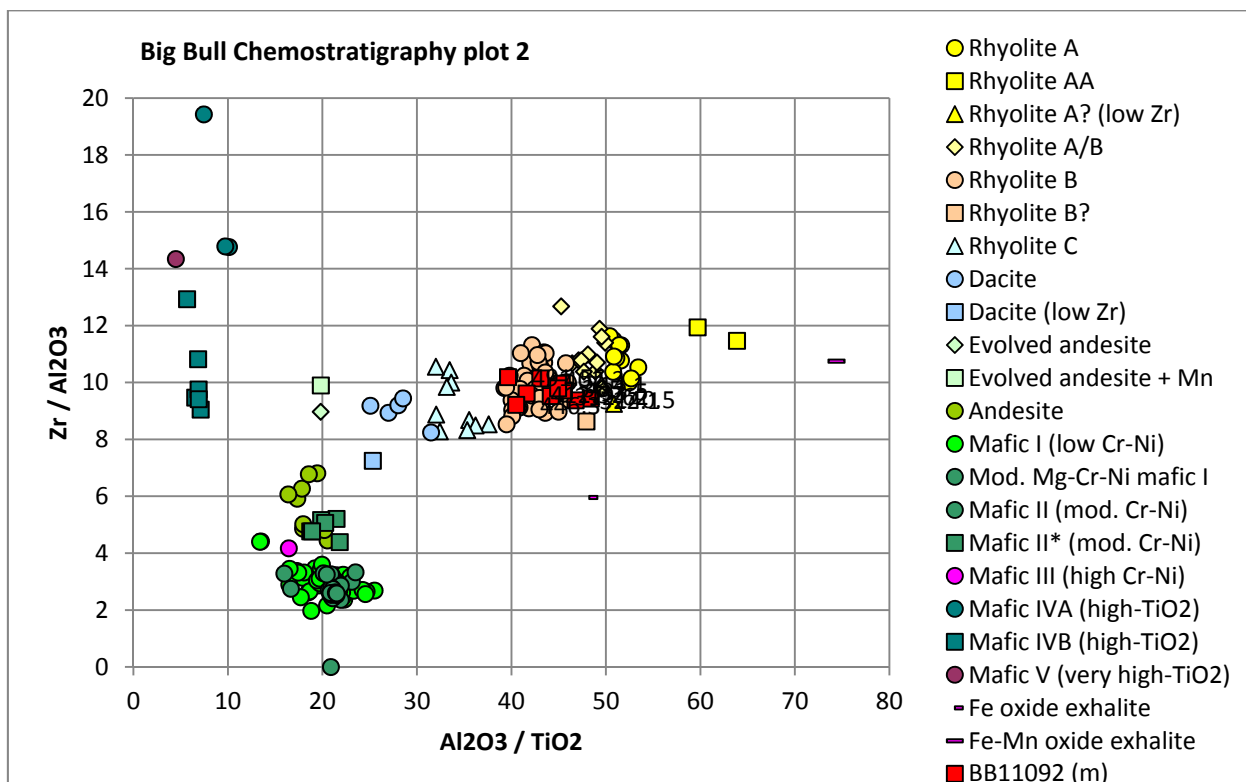


Figure 6.4: Big Bull Chemostratigraphy Rock Group Definitions plot3: Zr/TiO_2 : Zr/Al_2O_3

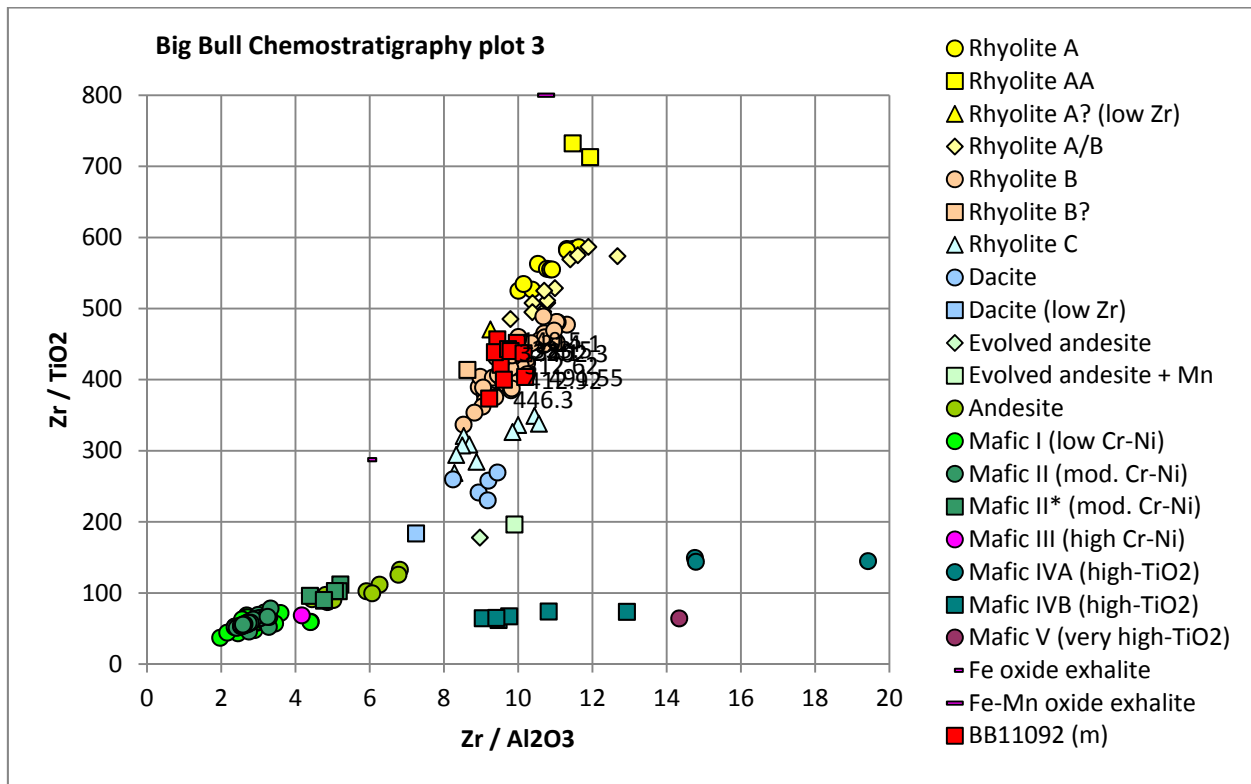
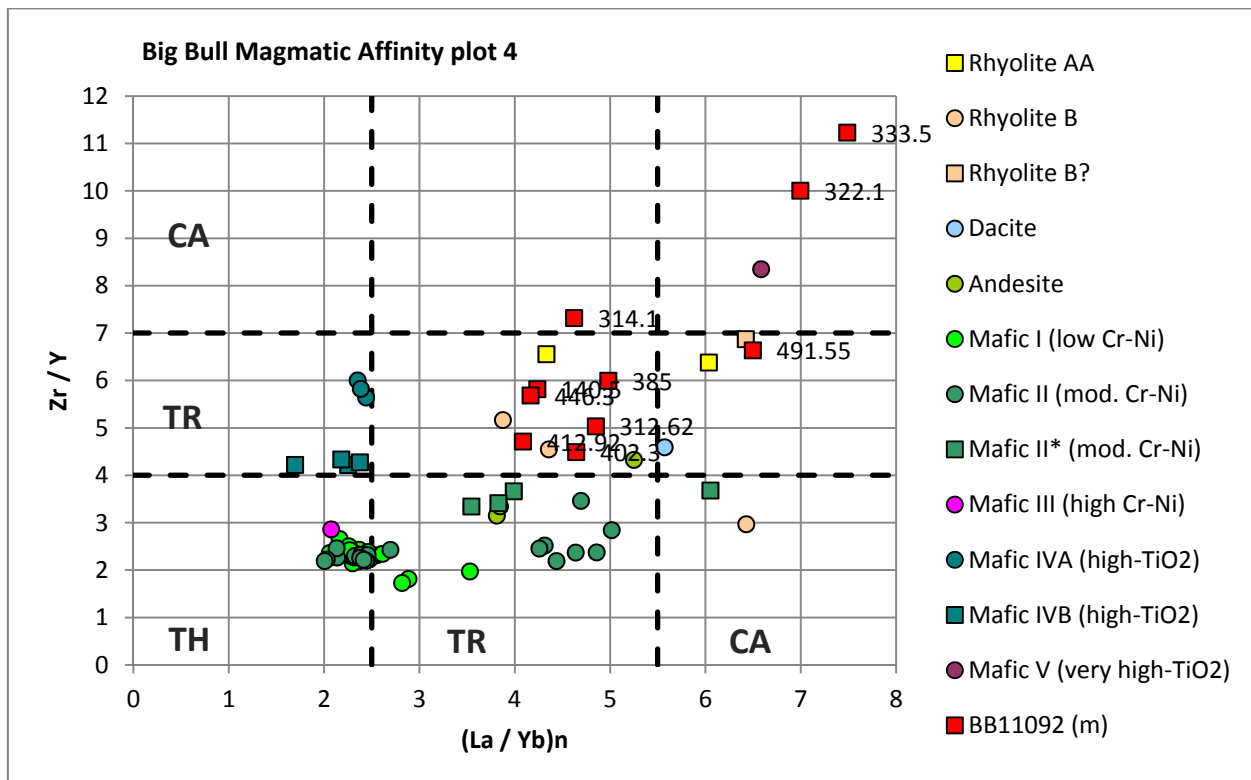


Figure 6.5: Big Bull Chemostratigraphy Rock Group Magmatic Affinity



6.3 BB11092 GEOCHEMICAL ALTERATION & MASS CHANGES

Mass change calculations yield the absolute amounts of each mobile element leached out of the rock or added to by hydrothermal fluids, with the extent determined more by the state of the fluid (pH and temp), than the composition of the host rock. In the case of leaching, virtually all volcanic rocks contain enough SiO₂, CaO and Na₂O to allow large amounts of these components to be removed by hot fluids, and this will continue until the rock is converted to stable residual phases such as sericite + chlorite; in the case of precipitation, from cooling fluids, the fluids are little influenced by the composition of the rock, but precipitate their various components based mainly on changes in T and pH (Barret 2006).

Mass changes calculations quantitatively determine the degree and pattern of hydrothermal alteration in order to identify intensity of sericitization and chloritization (alteration trends), and in particular zones that might represent paleo-conduits.

The mass changes were calculated for BB11092 Table 6.2, using pre-cursor composition fraction trends defined by Redfern(Barrett 2006) and the methods described by Barrett 1993 – see Appendix V for details. The significance of the mass changes are highlighted according to the criteria in Table 6.3:

Discussion of the mass changes and several alteration indices follows with the strip log for BB11092.

Table 6.2: BB11092 Absolute mass changes

BB11092 (m)	Δ SiO ₂ %	Δ FeO%	Δ MnO%	Δ MgO%	Δ CaO%	Δ Na ₂ O%	Δ K ₂ O%	Δ Ba ppm	Δ Anh sum%
140.5	-11.10	0.40	0.02	-0.16	-0.67	1.49	-1.45	404	-11.49
312.62	12.93	4.98	-0.03	-0.03	-1.97	-2.98	2.00	3295	15.19
314.1	-33.05	-0.98	-0.02	0.28	-1.14	-1.64	0.75	3238	-35.50
322.1	-22.03	0.03	-0.04	-0.60	-1.59	0.37	-0.20	2093	-23.92
333.5	-13.35	-0.44	-0.02	-0.10	-0.04	-2.26	1.23	1959	-14.82
385	-17.68	-0.14	0.02	0.33	-0.31	-1.75	0.89	64	-18.65
402.3	7.83	0.39	-0.02	-0.04	-1.13	-3.44	1.19	213	4.83
412.92	-24.45	0.94	0.02	1.65	0.45	-3.31	1.74	1428	-22.83
446.3	-5.34	0.15	0.08	0.09	-1.20	1.41	-0.45	-185	-5.30
491.55	-25.92	0.71	0.00	0.20	-0.98	-1.22	-0.08	129	-27.20

Table 6.3: Absolute mass changes significance levels

	Δ SiO ₂ %	Δ FeO%	Δ MnO%	Δ MgO%	Δ CaO%	Δ Na ₂ O%	Δ K ₂ O%	Δ Ba ppm	Δ Anh sum%
Large Negative	<-20	<-3		<-3	<-6	<-6	<-3		
Moderate Negative	<-5	<-1		<-1	<-2	<-2	<-0.5		
Not Significant	-5 to 5	-1 to 1		-1 to 1	-2 to 2	-2 to 2	-0.5 to 0.5	0-1000	
Small Positive							>0.5	>1000	
Moderate Positive	>5	>1		>1	>2	>2	>2	>3000	
Large Positive	>20	>3		>3	>6	>6	>4	>10000	

Figure 6.6: BB11092 Chemostratigraphy & Precious Metals Assays (Au, Ag)

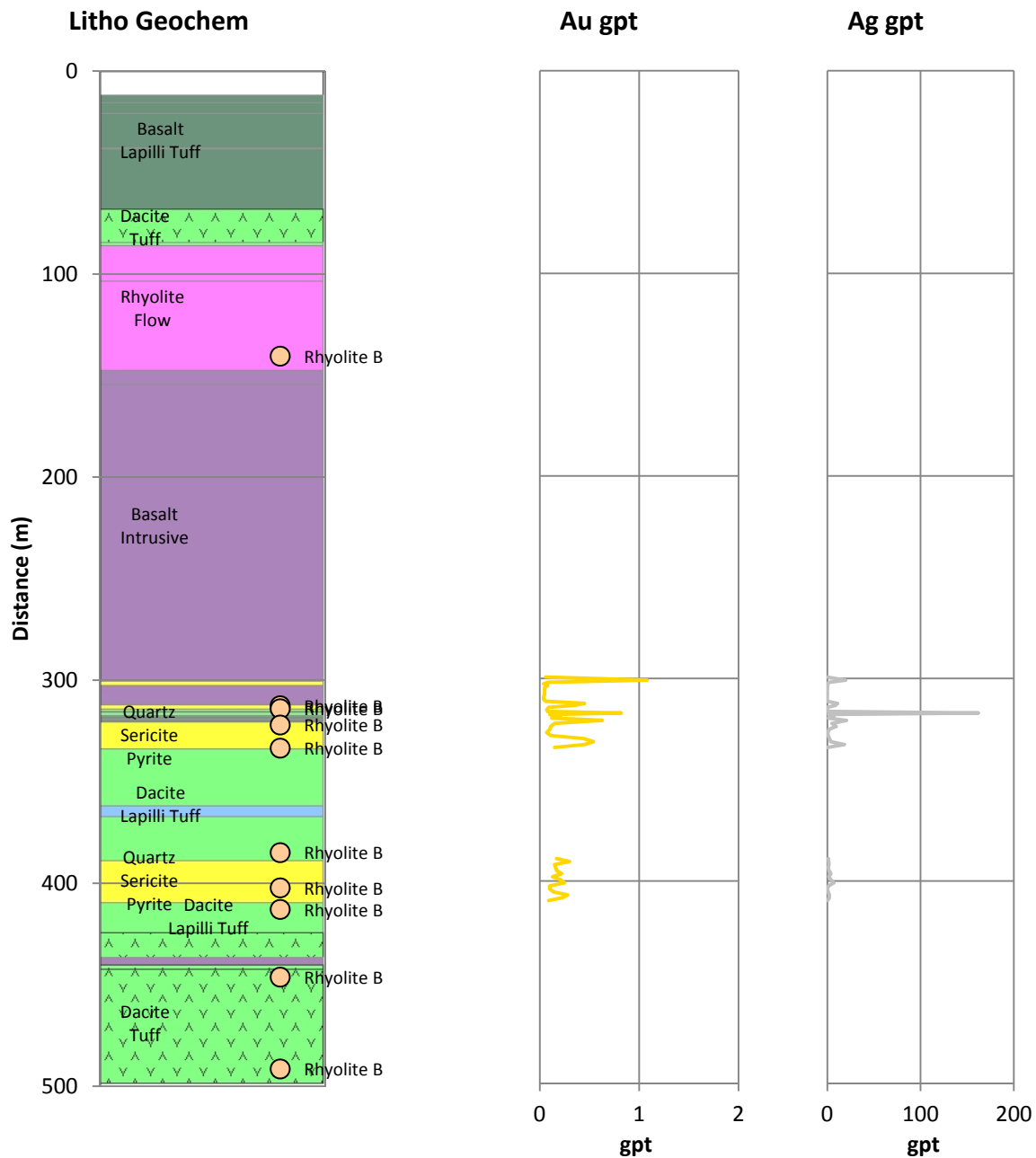


Figure 6.6: show the strip log for BB11092 and precious metals assays in the quartz sericite pyrite altered areas, with low grade mineralisation.

Figure 6.7: BB11092 Chemostratigraphy & Base Metals Assays (Cu, Pb, Zn)

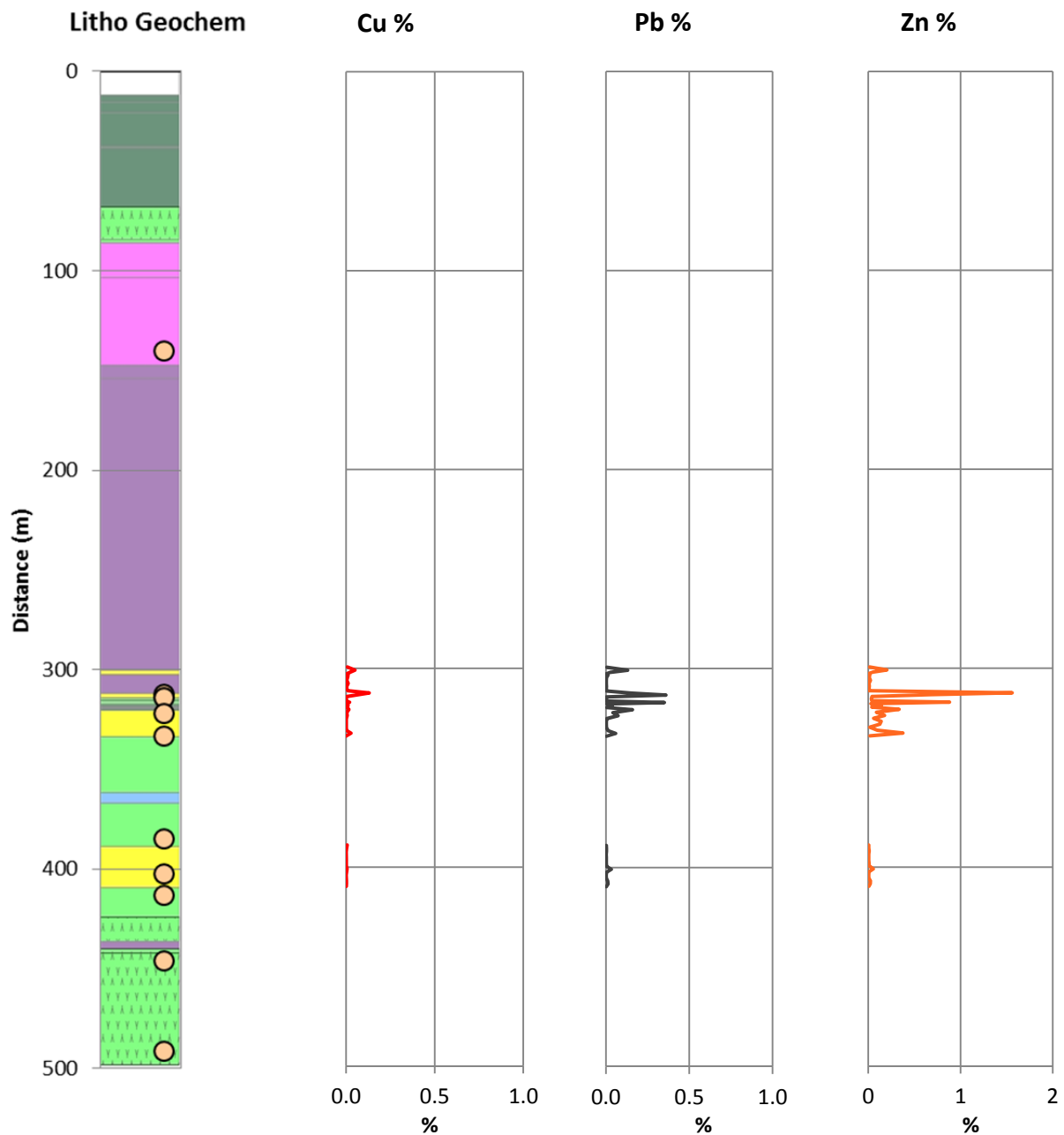


Figure 6.7: show the strip log for BB11092 and precious metals assays in the quartz sericite pyrite altered areas, with low grade mineralisation.

Figure 6.8: BB11092 Chemostratigraphy, Ishikawa & ~Sericite Mass Change Alteration Indices

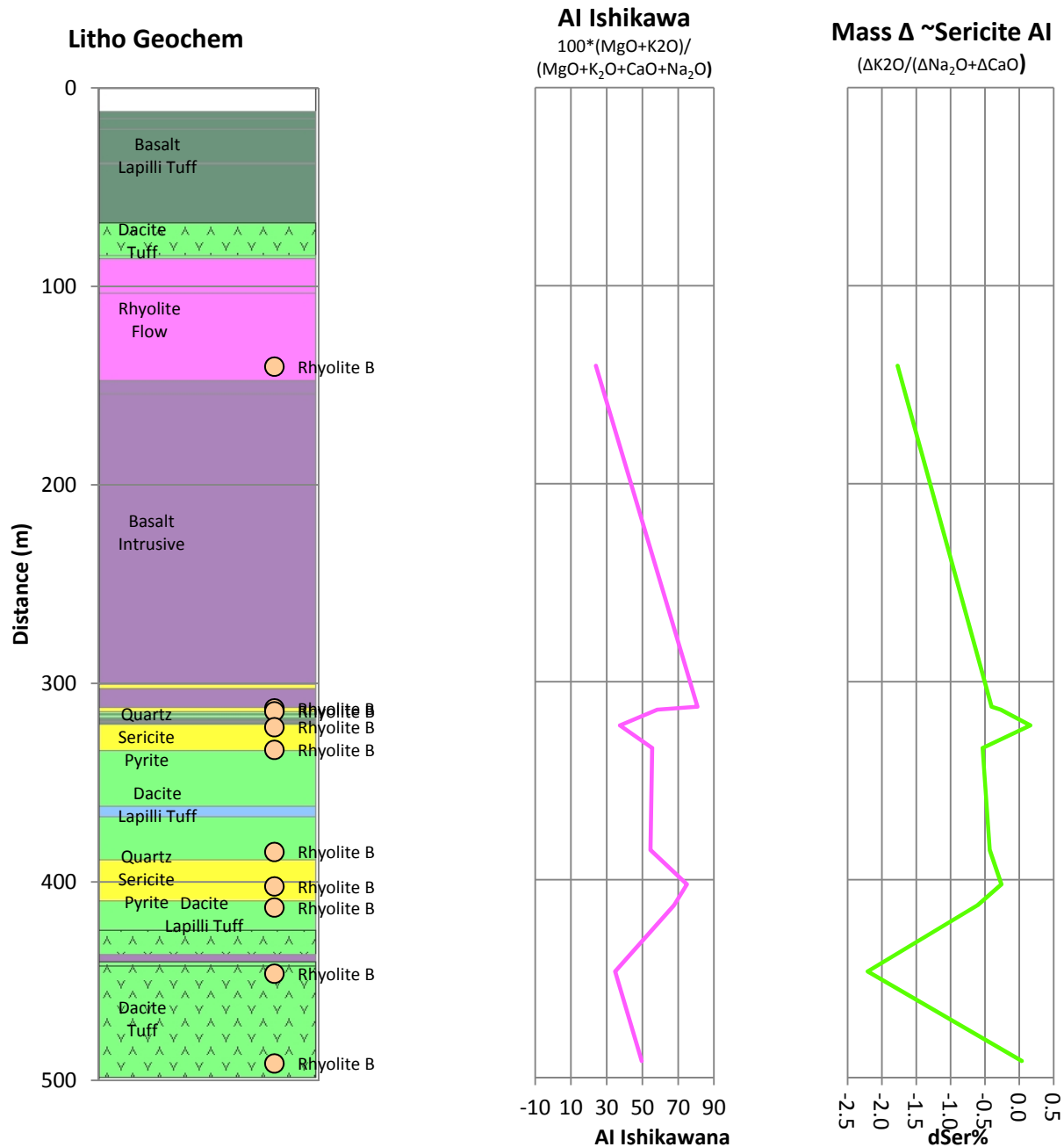


Figure 6.8: shows the Ishikawa standard alteration index used as a measure of sericite and chlorite alteration intensity from raw data, but alone it is not clear if the high values are being caused by chloritization, sericitization or some combination of both. The mass changes sericite index, although similar is more accurate in identifying of the intensity of sericite alteration alone, which can be seen with the additional peak at 322.1m. From the BB11092 drilllog: 312.62 & 314.1m 10% sericite; 322.1m 40% sericite.

Figure 6.9: BB11092 Chemostratigraphy, CCPI & ~Chlorite Mass Change Alteration Indices

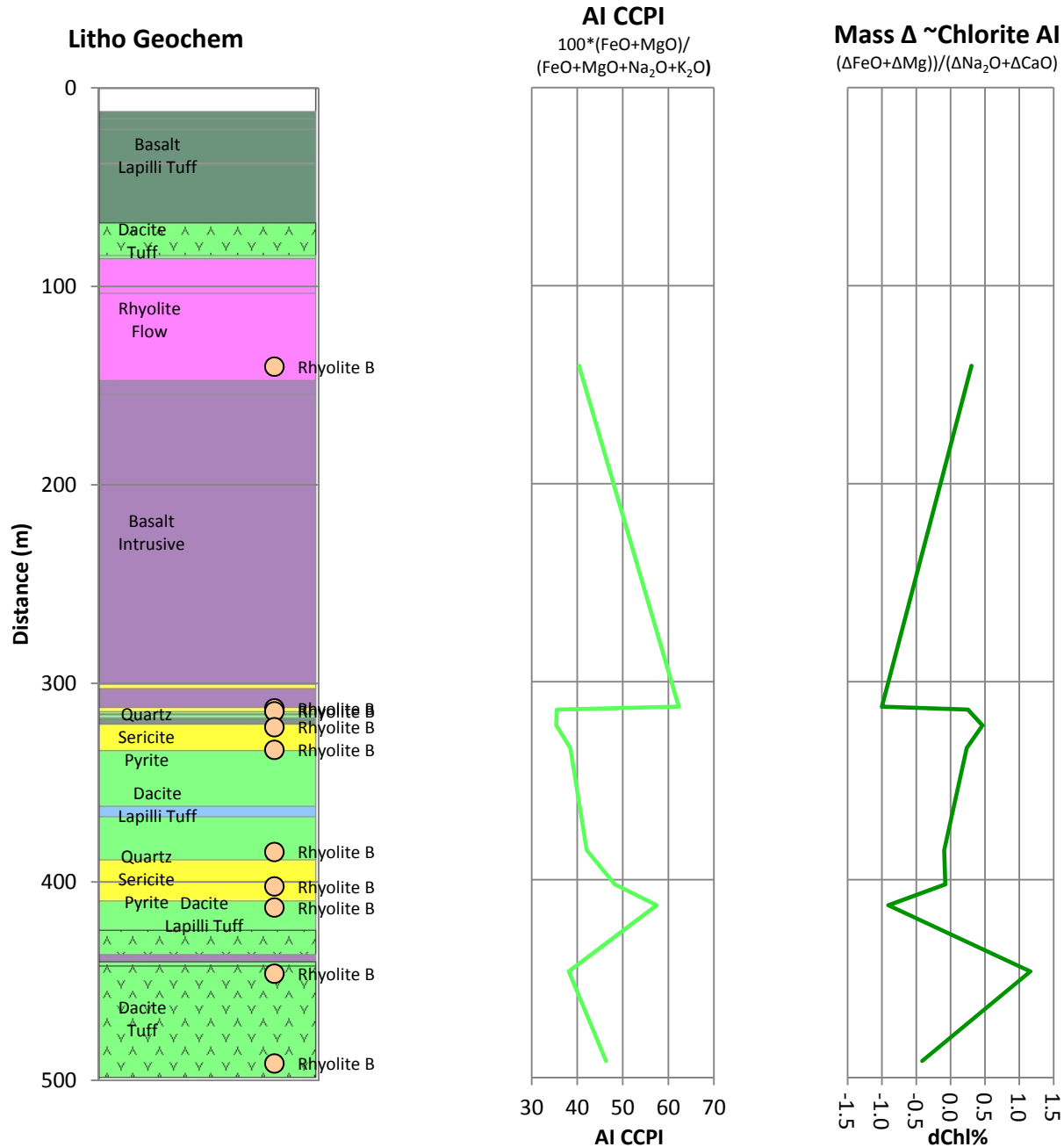


Figure 6.9: shows chlorite-carbonate-pyrite (CCPI) alteration index, approximating prominence of chlorite Fe-Mg carbonates and pyrite (Gifkins 2005) from raw data, but is only suitable for felsic rocks as mafic unaltered rocks with high primary FeO and MgO may have values >50. The mass changes chlorite index, shows a similar but reverse trend, and is more accurate in identifying of the intensity of chlorite alteration alone, which can be seen with the additional peak intensity at 446.3m.

Figure 6.10: BB11092 Chemostratigraphy & Absolute Mass Changes (SiO_2 , FeO, MnO)

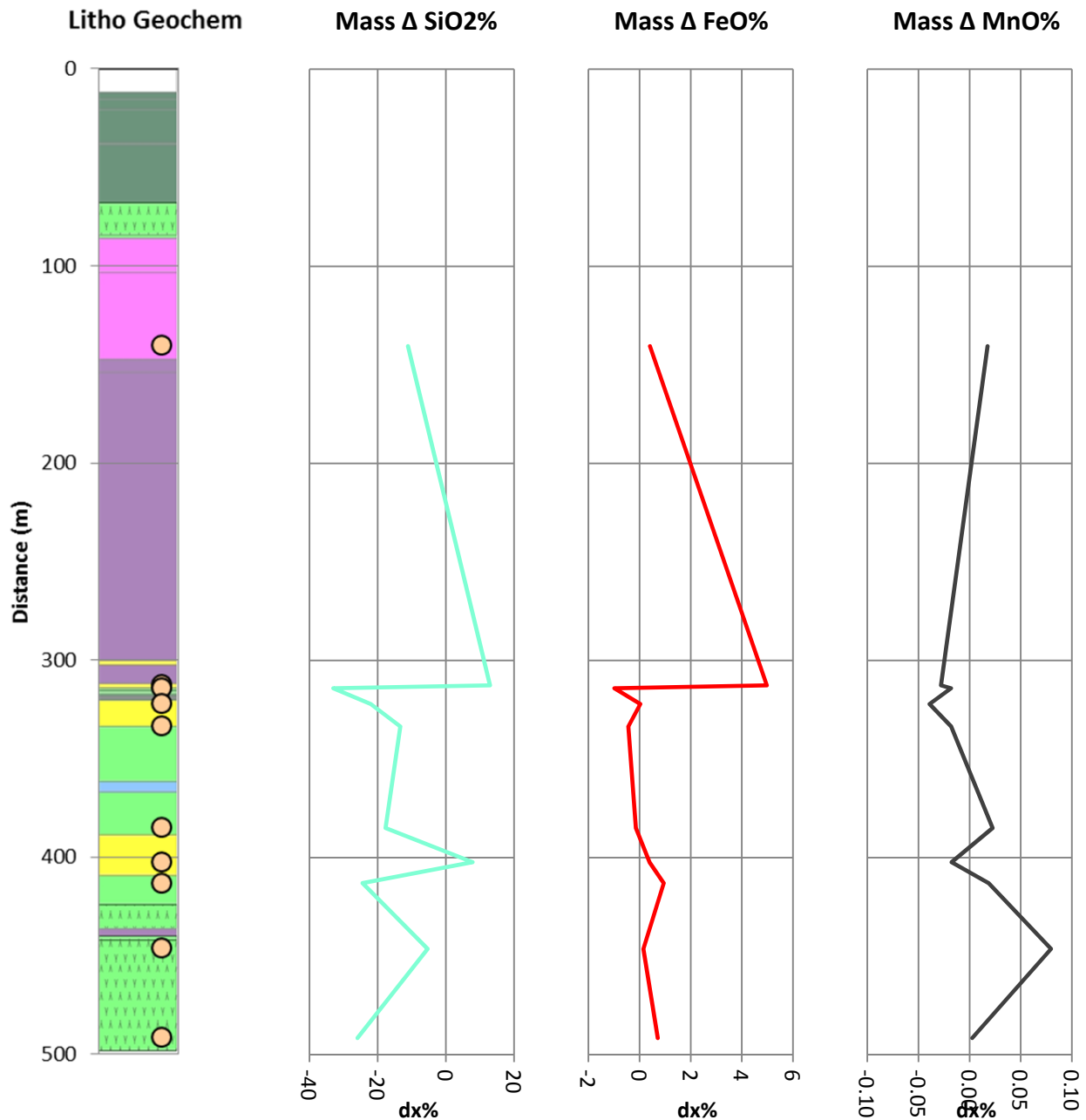


Figure 6.10 shows SiO_2 moderate positive gain at location 312.62m with precipitation of silica and moderate to large negative SiO_2 (>20) changes in the more intensely altered areas with silica removal and residual phases converted to stable sericite and chlorite. Figure 6.10: At 312.62m the FeO large positive changes result from chloritization. The MnO changes are insignificant.

Figure 6.11: BB11092 Chemostratigraphy & Absolute Mass Changes (MgO, CaO, Na₂O)

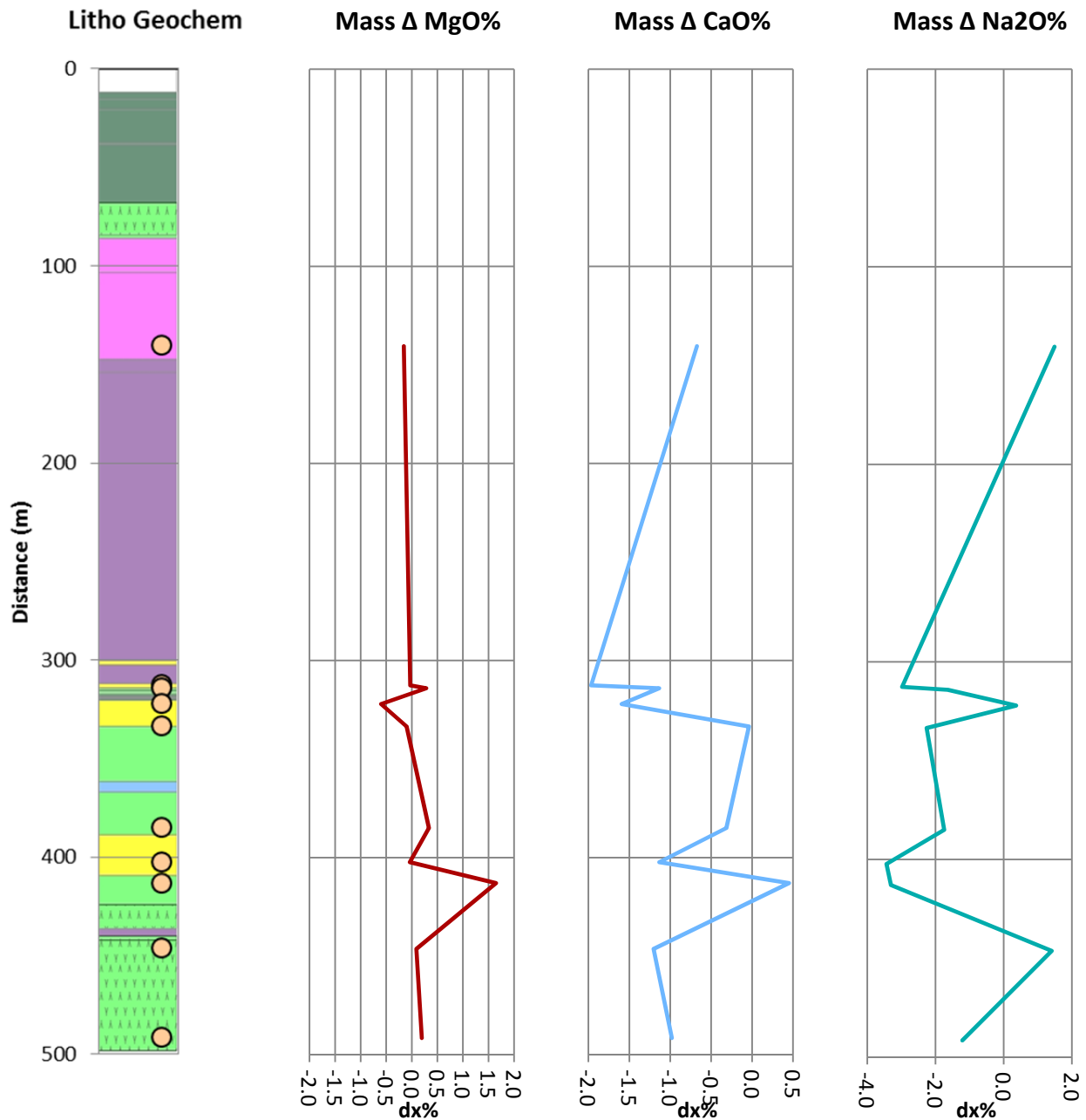


Figure 6.11: shows moderate positive MgO(>1) at 412.92m which could show chloritization, but this is usually indicated by large positive changes in MgO(>3). The CaO results are insignificant. The moderate negative (<-1) Na₂O results could indicate chloritization and sericitization from hot fluids, but usually this requires large negative mass changes(<-6).

Figure 6.12: BB11092 Chemostratigraphy & Absolute Mass Changes (K_2O , Ba, CaO, $\Delta Sum\%$)

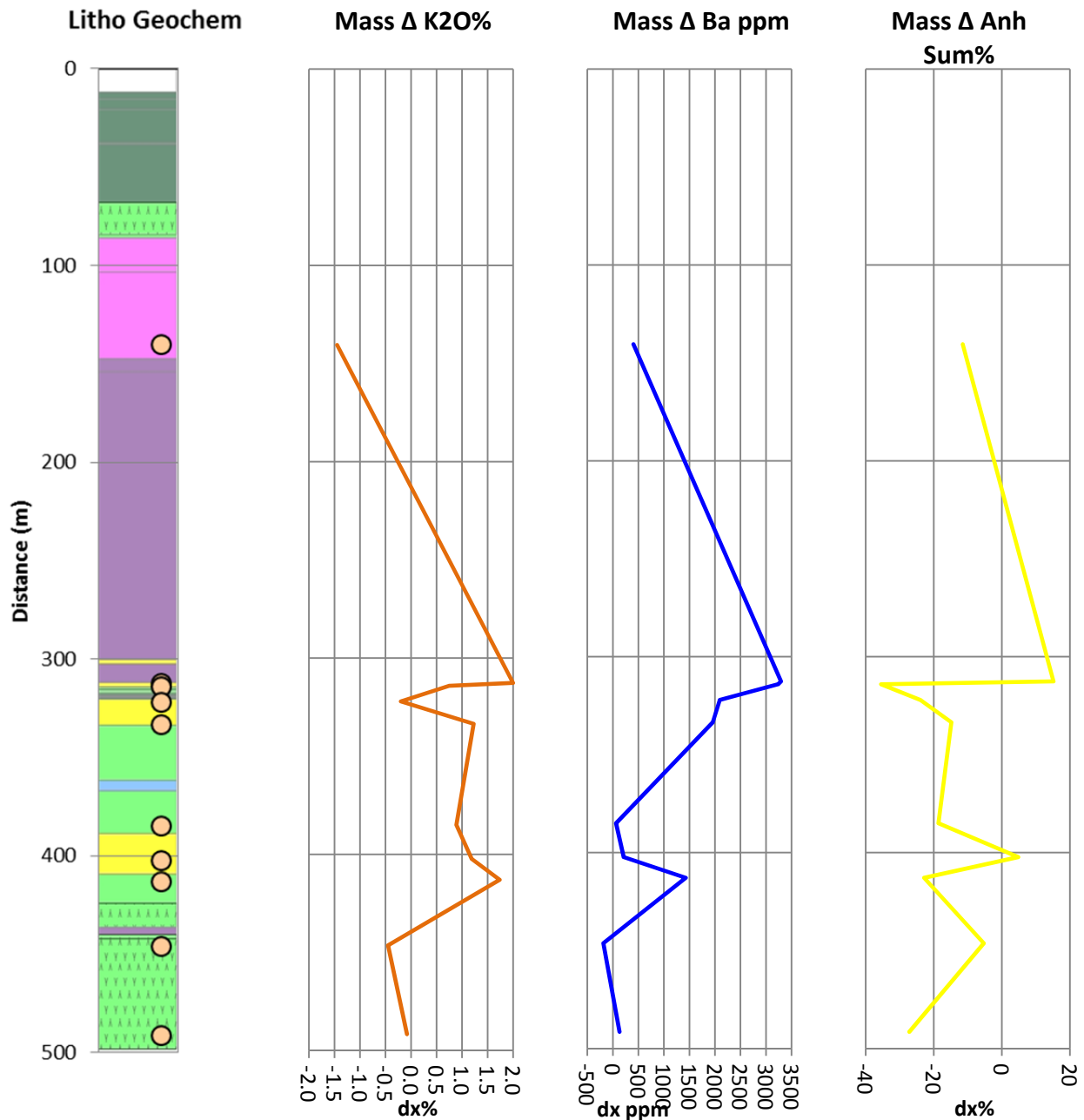


Figure 6.12: shows K_2O moderate positive changes at 312.62 are due to sericitization where K is added to the rock by fluids, rather than sericite formed from K that is already in the rock, 140.5m has moderate K_2O loss and most other samples show a small positive K_2O gain. The Barium results are similar to K_2O with high positive at 312.62 and 314.1m and small corresponding positive in other locations. Barium usually follows K pretty closely and being incorporated in minerals such as K-feldspar and sericite, in strongly sericitized rocks a few 1000ppm Ba can be located in sericite, above that the Ba must be mainly in barite, commonly precipitating when hydrothermal fluids meet up with cooler oxidized sea water(Barrett 2006).

The total mass changes sum of the mass changes identify the most altered areas, but is dominated by the larger constituents(SiO_2 & FeO).

6.4 BB11092 GEOCHEMICAL CONCLUSIONS

The precursor composition of all samples from BB11092 is 'rhyolite B' suggesting the same magmatic source, the immobile element plots are not completely homogenous suggesting some lesser possible mixing in the lapilli tuff units with possible andesitic or mafic fragments. The mass changes identify the alteration phases and minerals formed, with the most strongly altered areas in BB11092 at 312.62 & 314.1m with large silica loss and moderate sericitization & chloritization; and 446.3m with large silica loss and moderate chloritization.

7. RECOMMENDATIONS

The lithogeochemical methods were successful in identifying the chemostratigraphy and quantifying alteration intensity with mass change calculations in BB11092. Further work is recommended to compare the historic Big Bull lithogeochemical data set to the new 2014 Big Bull Mineral Resource for correlations in chemostratigraphy and also map the geography of the hydrothermal alteration system, with proximal, distal and paleoconduit indicators.

New targets identified from this lithogeochemical review would be added to existing Big Bull geophysical drill ready targets. A drill program consisting of 6,500 meters of surface drilling and helicopter reconnaissance mapping/sampling should be sufficient to initiate testing of these targets, with a modest budget of \$1.5-\$3.0m.

8. REFERENCES

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9. STATEMENT OF QUALIFICATIONS

I, Brett Armstrong of North Vancouver, British Columbia, do hereby certify that as the Author of this Assessment Report "Tulsequah Project 2014 Feasibility Study Optimization: Tulsequah Chief and Big Bull Resources & Reserve", dated December 19th, 2014, I hereby make the following statements:

1. I am employed as Exploration Manager by Chieftain Metals Inc. since 2011, with a business address at Suite 2510, Two Bloor Street West, Toronto, Ontario, M4W 3E2.
2. I am a qualified person as defined by National Instrument 43-101
3. I am a graduate of the University of Tasmania, Australia 1995 with a Bachelor of Science degree, double major in Geology.
4. I completed the Applied Geostatistics Citation (Faculty of Extension) conducted by the Centre for Computational Geostatistics, University of Alberta, June 2015.
5. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia, Licence No. 37985.
6. I have practiced my profession in mineral exploration since 2004, including work on volcanogenic massive sulphide deposits in British Columbia and Portugal.
7. I am responsible for all sections of this Assessment Report.
8. I have had prior involvement in the Property from 2004-2009 as an Exploration Geologist for Redfern Resources, the previous owner.
9. As of the date of this certificate, to my knowledge, information and belief, this Assessment Report contains all scientific and technical information that is required to be disclosed to make the Assessment report not misleading.
10. I am not independent of Chieftain Metals Inc.

Original Document, signed and sealed by



"Brett D. Armstrong, P. Geo."

4th, December 2014

Exploration Manager
Chieftain Metals Inc.

**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX I

**LITHOGEOCHEMICAL ASSAYS
BB11092**

BUREAU VERITAS COMMODITIES CANADA LTD.

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**



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Submitted By: Brett Armstrong
Receiving Lab: Canada-Vancouver
Received: October 19, 2015
Report Date: November 10, 2015
Page: 1 of 2

CERTIFICATE OF ANALYSIS

VAN15002793.1

CLIENT JOB INFORMATION

Project: Tulsequah Checks
Shipment ID: Litho 2015
P.O. Number: PR-00971
Number of Samples: 10

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days
DISP-RJT Dispose of Reject After 90 days

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

Invoice To: Chieftain Metals Inc.
Suite 1500, 701 West Georgia Street
Vancouver BC V7Y 1C6
CANADA

CC:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
BAT01	1	Batch charge of <20 samples			VAN
PRP70-250	10	Crush, split and pulverize 250 g rock to 200 mesh			VAN
PULSW	10	Extra Wash with Silica between each sample			VAN
LF202	10	Total Whole Rock Characterization with AQ200	0.2	Completed	VAN
DRPLP	10	Warehouse handling / disposition of pulps			VAN
DRRJT	7	Warehouse handling / Disposition of reject			VAN

ADDITIONAL COMMENTS



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Report Date: November 10, 2015

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CERTIFICATE OF ANALYSIS

VAN15002793.1

	Method Analyte Unit MDL	WGHT	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200
		Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ni	Sc	LOI	Sum	Ba	Be	Co	Cs
		kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	%	%	ppm	ppm	ppm	ppm
		0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	20	1	-5.1	0.01	1	1	0.2
BB11092_Litho_140.5	Drill Core	0.36	67.43	15.97	4.08	1.18	2.13	5.82	1.33	0.33	0.07	0.08	<0.002	<20	9	1.3	99.76	1304	1	9.3	1.9
BB11092_Litho_312.62	Drill Core	0.18	65.36	11.04	6.71	0.90	0.46	0.61	3.59	0.25	0.04	0.02	<0.002	<20	6	5.2	94.13	3132	1	3.5	1.3
BB11092_Litho_314.1	Drill Core	0.21	59.63	21.31	2.93	2.11	1.96	3.33	5.29	0.47	0.06	0.05	<0.002	<20	11	2.0	99.12	6096	<1	2.5	3.3
BB11092_Litho_322.1	Drill Core	0.25	62.95	18.25	4.16	0.80	1.29	5.20	3.08	0.39	0.07	0.02	<0.002	<20	10	3.3	99.52	3617	1	4.6	1.5
BB11092_Litho_333.5	Drill Core	0.33	67.85	16.40	3.03	1.22	2.84	1.78	4.53	0.36	0.06	0.04	<0.002	<20	10	1.4	99.56	3161	2	0.4	2.5
BB11092_Litho_385	Drill Core	0.64	65.75	17.08	3.53	1.78	2.61	2.49	4.34	0.38	0.07	0.09	<0.002	<20	9	1.7	99.80	1025	2	3.6	2.4
BB11092_Litho_402.3	Drill Core	0.27	74.33	12.92	3.14	0.96	1.15	0.40	3.67	0.30	0.06	0.03	<0.002	<20	7	2.9	99.83	939	<1	3.6	1.5
BB11092_Litho_412.92	Drill Core	0.36	59.64	17.89	5.27	3.54	3.74	0.60	5.53	0.43	0.06	0.09	<0.002	<20	10	2.8	99.56	2762	1	4.3	4.4
BB11092_Litho_446.3	Drill Core	0.33	68.40	14.99	3.59	1.40	1.51	5.29	2.22	0.37	0.08	0.14	<0.002	<20	9	1.9	99.86	594	1	4.4	1.2
BB11092_Litho_491.55	Drill Core	0.32	62.43	18.63	5.00	1.69	1.85	3.55	3.62	0.47	0.09	0.07	<0.002	<20	11	2.3	99.75	1247	2	4.4	3.0



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Report Date: November 10, 2015

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CERTIFICATE OF ANALYSIS

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Method Analyte Unit MDL		LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200
		Ga	Hf	Nb	Rb	Sn	Sr	Ta	Th	U	V	W	Zr	Y	La	Ce	Pr	Nd	Sm	Eu	Gd
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		0.5	0.1	0.1	0.1	1	0.5	0.1	0.2	0.1	8	0.5	0.1	0.1	0.1	0.1	0.02	0.3	0.05	0.02	0.05
BB11092_Litho_140.5	Drill Core	15.0	4.2	5.9	27.8	1	246.8	0.5	6.9	1.4	66	1.2	150.7	25.9	20.0	41.5	4.98	20.9	4.75	1.13	4.78
BB11092_Litho_312.62	Drill Core	15.6	2.9	4.3	57.6	2	89.0	0.4	5.1	2.0	17	3.4	105.2	20.9	17.0	33.0	3.84	15.7	3.49	1.14	3.50
BB11092_Litho_314.1	Drill Core	21.2	5.6	8.2	103.4	2	168.9	0.5	8.8	1.5	205	2.7	212.3	29.0	22.1	46.5	5.61	22.6	5.05	1.38	5.19
BB11092_Litho_322.1	Drill Core	17.1	5.1	6.7	52.6	1	154.7	0.5	7.4	5.2	24	6.9	171.1	17.1	21.4	46.0	5.48	22.0	4.78	1.26	4.26
BB11092_Litho_333.5	Drill Core	16.4	4.5	5.9	75.0	1	94.8	0.4	7.1	1.2	52	1.4	159.5	14.2	18.9	37.3	4.38	17.4	3.26	1.06	3.19
BB11092_Litho_385	Drill Core	16.7	4.9	6.9	89.9	2	137.3	0.6	7.7	1.9	13	0.6	167.3	27.9	23.3	51.4	5.98	24.0	5.01	1.21	5.15
BB11092_Litho_402.3	Drill Core	11.7	4.0	5.2	55.6	2	76.7	0.4	6.3	2.4	21	1.1	131.1	29.2	20.0	40.7	4.64	17.9	3.79	0.89	4.06
BB11092_Litho_412.92	Drill Core	16.5	5.1	6.6	102.3	1	248.1	0.5	8.2	0.7	15	0.9	172.0	36.5	25.9	49.7	5.95	24.4	5.44	1.26	5.52
BB11092_Litho_446.3	Drill Core	13.1	4.2	5.5	42.3	1	141.2	0.4	6.0	1.0	25	1.0	138.2	24.3	16.7	36.2	4.23	16.2	3.82	0.95	4.35
BB11092_Litho_491.55	Drill Core	18.7	5.4	7.3	69.1	2	329.6	0.4	8.3	1.2	20	1.2	189.8	28.6	30.1	57.8	6.76	27.2	6.10	1.35	5.63



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Method Analyte Unit MDL		LF200	LF200	LF200	LF200	LF200	LF200	LF200	TC000	TC000	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200
		Tb	Dy	Ho	Er	Tm	Yb	Lu	TOT/C	TOT/S	Mo	Cu	Pb	Zn	Ni	As	Cd	Sb	Bi	Ag	Au
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb
		0.01	0.05	0.02	0.03	0.01	0.05	0.01	0.02	0.02	0.1	0.1	0.1	1	0.1	0.5	0.1	0.1	0.1	0.1	0.5
BB11092_Litho_140.5	Drill Core	0.77	4.92	0.91	2.93	0.46	3.18	0.49	0.08	0.39	<0.1	38.7	1.8	26	4.7	2.7	<0.1	0.3	0.1	<0.1	1.1
BB11092_Litho_312.62	Drill Core	0.62	3.64	0.74	2.21	0.32	2.36	0.38	<0.02	6.95	11.0	1224.9	3241.5	>10000	0.6	168.7	218.5	147.2	2.4	15.4	475.0
BB11092_Litho_314.1	Drill Core	0.87	5.37	0.98	3.16	0.47	3.22	0.53	0.02	0.17	0.1	7.8	11.0	492	1.2	6.7	1.2	1.2	<0.1	0.1	9.5
BB11092_Litho_322.1	Drill Core	0.66	3.89	0.67	1.99	0.29	2.06	0.29	0.10	2.96	2.7	11.3	28.7	105	0.7	12.6	0.3	2.8	<0.1	1.1	23.1
BB11092_Litho_333.5	Drill Core	0.50	3.04	0.59	1.45	0.24	1.70	0.26	0.03	0.07	<0.1	10.7	8.4	138	0.7	4.3	0.1	0.9	<0.1	<0.1	3.0
BB11092_Litho_385	Drill Core	0.85	5.25	0.98	2.95	0.49	3.15	0.55	0.08	<0.02	<0.1	3.2	2.7	63	1.0	2.2	<0.1	0.6	<0.1	<0.1	<0.5
BB11092_Litho_402.3	Drill Core	0.73	4.73	0.99	2.74	0.46	2.90	0.50	0.08	2.07	1.6	20.2	21.6	108	0.9	12.7	0.6	3.2	0.1	1.2	25.8
BB11092_Litho_412.92	Drill Core	0.93	5.69	1.17	3.66	0.57	4.27	0.61	0.05	0.07	<0.1	1.1	4.7	70	0.6	16.8	<0.1	2.0	<0.1	<0.1	2.8
BB11092_Litho_446.3	Drill Core	0.75	4.46	0.87	2.50	0.41	2.70	0.43	0.18	<0.02	<0.1	2.2	1.5	57	7.7	2.5	<0.1	0.7	<0.1	<0.1	1.6
BB11092_Litho_491.55	Drill Core	0.98	5.90	1.10	3.01	0.50	3.12	0.54	0.07	0.06	0.1	12.2	3.0	42	7.4	1.7	<0.1	0.8	<0.1	<0.1	1.3



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Report Date: November 10, 2015

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Part: 4 of 4

CERTIFICATE OF ANALYSIS

VAN15002793.1

	Method Analyte Unit MDL	AQ200	AQ200	AQ200
		Hg	Tl	Se
		ppm	ppm	ppm
		0.01	0.1	0.5
BB11092_Litho_140.5	Drill Core	<0.01	0.2	<0.5
BB11092_Litho_312.62	Drill Core	34.00	2.6	2.5
BB11092_Litho_314.1	Drill Core	0.20	10.1	<0.5
BB11092_Litho_322.1	Drill Core	0.13	2.9	<0.5
BB11092_Litho_333.5	Drill Core	0.02	16.1	<0.5
BB11092_Litho_385	Drill Core	0.01	0.9	<0.5
BB11092_Litho_402.3	Drill Core	0.09	0.3	<0.5
BB11092_Litho_412.92	Drill Core	<0.01	1.4	<0.5
BB11092_Litho_446.3	Drill Core	<0.01	0.1	<0.5
BB11092_Litho_491.55	Drill Core	<0.01	0.2	<0.5



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	Method	WGHT	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200
	Analyte	Wgt	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ni	Sc	LOI	Sum	Ba	Be	Co	Cs
	Unit	kg	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	%	%	ppm	ppm	ppm	ppm
	MDL	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	20	1	-5.1	0.01	1	1	0.2	0.1
BB11092_Litho_385	Drill Core	0.64	65.75	17.08	3.53	1.78	2.61	2.49	4.34	0.38	0.07	0.09	<0.002	<20	9	1.7	99.80	1025	2	3.6	2.4
Pulp Duplicates																					
BB11092_Litho_412.92	Drill Core	0.36	59.64	17.89	5.27	3.54	3.74	0.60	5.53	0.43	0.06	0.09	<0.002	<20	10	2.8	99.56	2762	1	4.3	4.4
REP BB11092_Litho_412.92	QC		59.50	17.87	5.34	3.57	3.76	0.60	5.57	0.44	0.05	0.09	<0.002	<20	10	2.8	99.56	2747	<1	3.8	4.4
Reference Materials																					
STD DS10	Standard																				
STD GS311-1	Standard																				
STD GS910-4	Standard																				
STD OREAS45EA	Standard																				
STD SO-18	Standard		58.23	14.15	7.56	3.38	6.31	3.64	2.14	0.69	0.77	0.39	0.548	42	24	1.9	99.71	537	2	27.4	7.0
STD SO-19	Standard		60.70	13.88	7.41	2.89	5.89	4.05	1.30	0.69	0.31	0.13	0.485	457	26	1.9	99.73	495	16	23.6	4.1
STD GS311-1 Expected																					
STD GS910-4 Expected																					
STD DS10 Expected																					
STD OREAS45EA Expected																					
STD SO-18 Expected			58.47	14.23	7.67	3.35	6.42	3.71	2.17	0.69	0.83	0.39	0.55	44	25			514		26.2	7.1
STD SO-19 Expected			61.13	13.95	7.47	2.88	6	4.11	1.29	0.69	0.32	0.13	0.5	470	27			486	20	24	4.5
BLK	Blank																				
BLK	Blank																				
BLK	Blank		<0.01	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<20	<1	0.0	<0.01	<1	<1	<0.2	<0.1
Prep Wash																					
ROCK-VAN	Prep Blank		70.81	14.03	3.15	0.84	2.44	4.41	2.15	0.36	0.09	0.08	<0.002	<20	7	1.5	99.84	869	<1	3.7	0.2
ROCK-VAN	Prep Blank		70.90	14.13	3.15	0.84	2.47	4.48	2.16	0.36	0.10	0.09	<0.002	<20	7	1.2	99.83	861	<1	3.7	0.1



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Method Analyte Unit MDL		LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200	LF200
		Ga	Hf	Nb	Rb	Sn	Sr	Ta	Th	U	V	W	Zr	Y	La	Ce	Pr	Nd	Sm	Eu	Gd
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		0.5	0.1	0.1	0.1	1	0.5	0.1	0.2	0.1	8	0.5	0.1	0.1	0.1	0.1	0.02	0.3	0.05	0.02	0.05
BB11092_Litho_385	Drill Core	16.7	4.9	6.9	89.9	2	137.3	0.6	7.7	1.9	13	0.6	167.3	27.9	23.3	51.4	5.98	24.0	5.01	1.21	5.15
Pulp Duplicates																					
BB11092_Litho_412.92	Drill Core	16.5	5.1	6.6	102.3	1	248.1	0.5	8.2	0.7	15	0.9	172.0	36.5	25.9	49.7	5.95	24.4	5.44	1.26	5.52
REP BB11092_Litho_412.92	QC	17.0	4.8	6.7	102.5	2	242.3	0.4	7.6	0.5	12	0.8	166.5	33.7	26.1	48.1	5.92	24.8	5.60	1.23	5.51
Reference Materials																					
STD DS10	Standard																				
STD GS311-1	Standard																				
STD GS910-4	Standard																				
STD OREAS45EA	Standard																				
STD SO-18	Standard	16.0	9.7	19.7	26.4	15	436.7	7.3	10.2	17.4	196	14.2	288.6	32.1	13.3	29.0	3.53	14.6	3.01	0.86	3.25
STD SO-19	Standard	15.9	2.9	64.4	19.0	19	338.6	4.3	13.3	20.5	162	8.9	105.9	35.4	66.1	158.2	19.66	78.8	13.46	3.65	10.37
STD GS311-1 Expected																					
STD GS910-4 Expected																					
STD DS10 Expected																					
STD OREAS45EA Expected																					
STD SO-18 Expected		17.6	9.8	19.3	28.7	15	407.4	7.4	9.9	16.4	200	14.8	290	29	12.3	27.1	3.45	14	3	0.89	2.93
STD SO-19 Expected		17.5	3.1	68.5	19.5	19	317.1	4.9	13	19.4	165	9.8	112	35.5	71.3	161	19.4	75.7	13.7	3.81	10.53
BLK	Blank																				
BLK	Blank																				
BLK	Blank	<0.5	<0.1	<0.1	<0.1	<1	<0.5	<0.1	<0.2	<0.1	<8	<0.5	<0.1	<0.1	<0.1	<0.1	<0.02	<0.3	<0.05	<0.02	<0.05
Prep Wash																					
ROCK-VAN	Prep Blank	11.5	3.5	5.6	37.8	<1	225.6	0.4	3.2	1.7	35	<0.5	129.6	17.8	14.0	26.0	3.23	12.2	2.61	0.82	2.76
ROCK-VAN	Prep Blank	11.7	3.5	5.5	37.5	<1	234.3	0.3	3.1	1.6	38	0.5	137.7	17.5	13.4	25.3	3.14	12.9	2.63	0.83	2.89



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Method Analyte Unit MDL		LF200	LF200	LF200	LF200	LF200	LF200	LF200	TC000	TC000	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200
		Tb	Dy	Ho	Er	Tm	Yb	Lu	TOT/C	TOT/S	Mo	Cu	Pb	Zn	Ni	As	Cd	Sb	Bi	Ag	Au
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb
		0.01	0.05	0.02	0.03	0.01	0.05	0.01	0.02	0.02	0.1	0.1	0.1	1	0.1	0.5	0.1	0.1	0.1	0.1	0.5
BB11092_Litho_385	Drill Core	0.85	5.25	0.98	2.95	0.49	3.15	0.55	0.08	<0.02	<0.1	3.2	2.7	63	1.0	2.2	<0.1	0.6	<0.1	<0.1	<0.5
Pulp Duplicates																					
BB11092_Litho_412.92	Drill Core	0.93	5.69	1.17	3.66	0.57	4.27	0.61	0.05	0.07	<0.1	1.1	4.7	70	0.6	16.8	<0.1	2.0	<0.1	<0.1	2.8
REP BB11092_Litho_412.92	QC	0.93	6.00	1.15	3.45	0.56	3.86	0.62													
Reference Materials																					
STD DS10	Standard										12.6	151.4	142.5	372	71.0	45.4	2.6	8.4	12.8	1.7	46.4
STD GS311-1	Standard								1.01	2.34											
STD GS910-4	Standard								2.64	8.39											
STD OREAS45EA	Standard										1.5	663.8	14.8	33	363.7	9.8	<0.1	0.4	0.3	0.2	48.1
STD SO-18	Standard	0.52	3.08	0.63	1.80	0.26	1.76	0.28													
STD SO-19	Standard	1.39	7.34	1.22	3.52	0.50	3.29	0.51													
STD GS311-1 Expected									1.02	2.35											
STD GS910-4 Expected									2.65	8.27											
STD DS10 Expected											13.6	154.61	150.55	370	74.6	46.2	2.62	9	11.65	2.02	91.9
STD OREAS45EA Expected											1.6	709	14.3	31.4	381	10.3	0.03	0.32	0.26	0.26	53
STD SO-18 Expected		0.53	3	0.62	1.84	0.27	1.79	0.27													
STD SO-19 Expected		1.41	7.5	1.39	3.78	0.55	3.55	0.53													
BLK	Blank								<0.02	<0.02											
BLK	Blank										<0.1	0.2	<0.1	<1	<0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5
BLK	Blank	<0.01	<0.05	<0.02	<0.03	<0.01	<0.05	<0.01													
Prep Wash																					
ROCK-VAN	Prep Blank	0.48	3.04	0.61	1.97	0.32	2.26	0.36	0.08	<0.02	0.9	4.0	1.3	29	0.7	0.8	<0.1	<0.1	<0.1	<0.1	0.9
ROCK-VAN	Prep Blank	0.48	2.96	0.54	1.87	0.30	2.27	0.35	0.05	<0.02	0.8	3.7	1.1	29	0.7	1.5	<0.1	<0.1	<0.1	<0.1	<0.5



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Method Analyte Unit MDL		AQ200	AQ200	AQ200
		Hg	Tl	Se
		ppm	ppm	ppm
		0.01	0.1	0.5
BB11092_Litho_385	Drill Core	0.01	0.9	<0.5
Pulp Duplicates				
BB11092_Litho_412.92	Drill Core	<0.01	1.4	<0.5
REP BB11092_Litho_412.92	QC			
Reference Materials				
STD DS10	Standard	0.29	4.9	2.0
STD GS311-1	Standard			
STD GS910-4	Standard			
STD OREAS45EA	Standard	0.02	<0.1	0.6
STD SO-18	Standard			
STD SO-19	Standard			
STD GS311-1 Expected				
STD GS910-4 Expected				
STD DS10 Expected		0.3	5.1	2.3
STD OREAS45EA Expected			0.072	0.78
STD SO-18 Expected				
STD SO-19 Expected				
BLK	Blank			
BLK	Blank	0.01	<0.1	<0.5
BLK	Blank			
Prep Wash				
ROCK-VAN	Prep Blank	<0.01	<0.1	<0.5
ROCK-VAN	Prep Blank	<0.01	<0.1	<0.5

**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX II

**LITHOGEOCHEMICAL SAMPLE PHOTOS
BB11092**

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

Photos: BB11092 Litho 140.5m



Photos: BB11092 Litho 312.62m & 314.1m



Photos: BB11092 Litho 322.1m



Photos: BB11092 Litho 333.5m



Photos: BB11092 Litho 385m



Photos: BB11092 Litho 402.3m



Photos: BB11092 Litho 412.92m



Photos: BB11092 Litho 446.3m



Photos: BB11092 Litho 491.55m



**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX III

BB11092 DRILL LOG

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

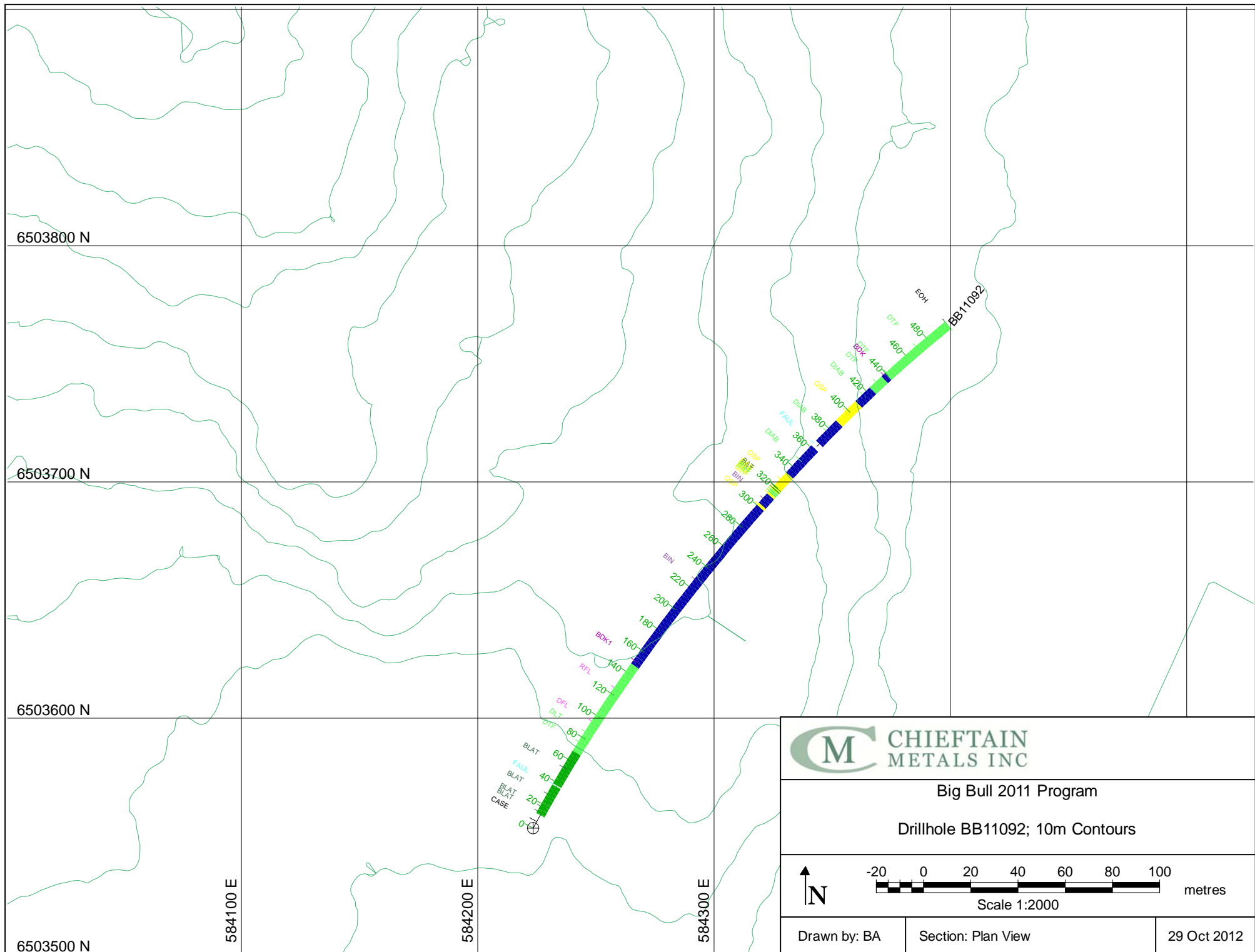
Atlin Mining Division

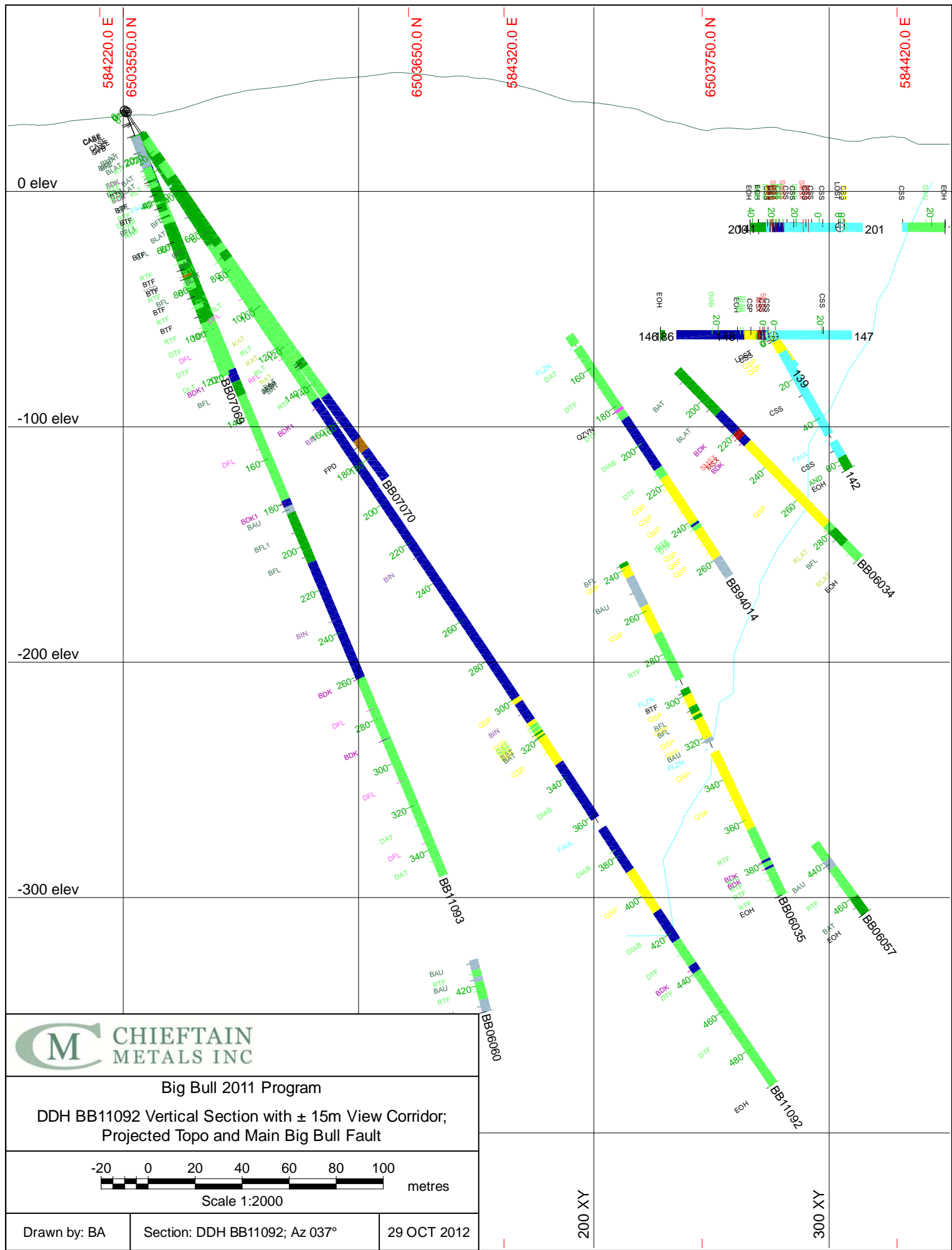
Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

Hole-ID BB11092			Collar X: (m) 584223.45	Collar Y: (m) 6503553.49	Collar Z: (m) 34.35	Length (m) 498	Azimuth 29	Dip -57.1								
Start Date: 7/22/2011	End Date: 7/28/2011	Core Size NQ	Contractor Hy-Tech			Logged Date 7/23/2011	Logged By M. Schmidt									
Collar Survey Method GPS Duel freq - Top of Collar		Collar Survey By Underhill - J. Cormier	Collar Survey Date 9/4/2011	Collar Azimuth Survey Method GPS dual freq NAD83 Az 29° ±5°		Collar Azimuth Survey By Underhill - J. Cormier	Collar Azimuth Survey Date 9/4/2011									
Purpose: Hole BB11092 was designed to target inferred blocks in the Big Bull resource model to quantify the grade, width and continuity of the main Big Bull lens at a planned intercept of 310m, and an lower alteration zone adjacent to the Big Bull fault at 450m.				Summary: Drillhole BB11092 was collared in Basalt lapilli ash and tuff at 11m-84m. Dacite tuffs and rhyolite flows from 84-154m with chaotic siliceous bands. Basalt intrusion from 154-312m, with 2m QSP alteration interval with weak mineralization at 300-302m. From 312m-320m is a series of alternating 1m quartz sericite pyrite alteration with weak mineralization and 1m basalt ash layers, the upper quartz-sericite-pyrite alteration interval has low grade mineralization from 311-313m with 8% sphalerite. A thicker QSP interval follows from 320-333m with weak mineralization. Basalt intrusive diabase is from 333-423, with a lower alteration QSP interval intercepted within from 388-408m with trace mineralization, and a shear zone at 406m likely the Big Bull fault. Dacite tuff continues from 423 to the end of the hole at 498m.												
Significant Intercepts:																
Hole-ID	From (m)	To (m)	Length (m)	True Width (m)	Zone	Lith	Au gpt	Ag gpt	Cu %	Pb %	Zn %	As ppm	SG g/cm3	\$US Eq/t SRK12	\$NSR/t CFB12	News Release Date
BB11092	316.8	317.36	0.56	0.49	BB	QSP	0.82	162	0.02	0.35	0.88	10	2.69	139	N/A	N/A





Drill Hole Log - Down Hole Survey

BB11092

Dist (m)	Azimuth	Dip	Method	By	Date	Comments	Dist (m)	Azimuth	Dip	Method	By	Date	Comments
0.00	29	-57.1	Underhill GPS Az / Maxibor Dip	MS	7/28/2011	Underhill GPS Az $\pm 5^{\circ}$	125.85	34.7	-56	Maxibor	MS	7/28/2011	
3.07	29.1	-57.4	Maxibor	MS	7/28/2011		128.92	34.8	-56	Maxibor	MS	7/28/2011	
6.14	29.1	-57.4	Maxibor	MS	7/28/2011		131.99	34.8	-56.1	Maxibor	MS	7/28/2011	
9.21	29	-57.3	Maxibor	MS	7/28/2011		135.06	34.8	-56.1	Maxibor	MS	7/28/2011	
12.28	29	-57.2	Maxibor	MS	7/28/2011		138.13	35	-56	Maxibor	MS	7/28/2011	
15.35	29.1	-57.2	Maxibor	MS	7/28/2011		141.20	35.1	-56.1	Maxibor	MS	7/28/2011	
18.42	29.2	-57.1	Maxibor	MS	7/28/2011		144.27	35.2	-56	Maxibor	MS	7/28/2011	
21.49	29.4	-57.1	Maxibor	MS	7/28/2011		147.34	35.4	-56	Maxibor	MS	7/28/2011	
24.56	29.6	-57.1	Maxibor	MS	7/28/2011		150.41	35.5	-56	Maxibor	MS	7/28/2011	
27.63	29.7	-57.1	Maxibor	MS	7/28/2011		153.48	35.6	-56	Maxibor	MS	7/28/2011	
30.70	29.9	-57.1	Maxibor	MS	7/28/2011		156.55	35.7	-56.1	Maxibor	MS	7/28/2011	
33.77	30	-57	Maxibor	MS	7/28/2011		159.62	35.8	-56.1	Maxibor	MS	7/28/2011	
36.84	30.2	-57	Maxibor	MS	7/28/2011		162.69	35.9	-56	Maxibor	MS	7/28/2011	
39.91	30.3	-56.9	Maxibor	MS	7/28/2011		165.76	36	-56.1	Maxibor	MS	7/28/2011	
42.97	30.4	-56.9	Maxibor	MS	7/28/2011		168.83	36.1	-56.1	Maxibor	MS	7/28/2011	
46.04	30.6	-56.9	Maxibor	MS	7/28/2011		171.90	36.2	-56	Maxibor	MS	7/28/2011	
49.11	30.8	-56.8	Maxibor	MS	7/28/2011		174.97	36.3	-56	Maxibor	MS	7/28/2011	
52.18	30.9	-57	Maxibor	MS	7/28/2011		178.04	36.4	-56	Maxibor	MS	7/28/2011	
55.25	31.1	-56.9	Maxibor	MS	7/28/2011		181.11	36.5	-56	Maxibor	MS	7/28/2011	
58.32	31.3	-56.9	Maxibor	MS	7/28/2011		184.18	36.6	-56	Maxibor	MS	7/28/2011	
61.39	31.5	-56.8	Maxibor	MS	7/28/2011		187.25	36.7	-56	Maxibor	MS	7/28/2011	
64.46	31.7	-56.8	Maxibor	MS	7/28/2011		190.32	36.9	-56	Maxibor	MS	7/28/2011	
67.53	32	-56.8	Maxibor	MS	7/28/2011		193.39	37.1	-56	Maxibor	MS	7/28/2011	
70.60	32.2	-56.8	Maxibor	MS	7/28/2011		196.46	37.3	-55.9	Maxibor	MS	7/28/2011	
73.67	32.3	-56.7	Maxibor	MS	7/28/2011		199.53	37.5	-56	Maxibor	MS	7/28/2011	
76.74	32.4	-56.7	Maxibor	MS	7/28/2011		202.59	37.7	-56	Maxibor	MS	7/28/2011	
79.81	32.5	-56.6	Maxibor	MS	7/28/2011		205.66	37.9	-55.9	Maxibor	MS	7/28/2011	
82.88	32.6	-56.5	Maxibor	MS	7/28/2011		208.73	38	-55.9	Maxibor	MS	7/28/2011	
85.95	32.7	-56.4	Maxibor	MS	7/28/2011		211.80	38	-56	Maxibor	MS	7/28/2011	
89.02	32.9	-56.4	Maxibor	MS	7/28/2011		214.87	38.1	-56	Maxibor	MS	7/28/2011	
92.09	33.1	-56.4	Maxibor	MS	7/28/2011		217.94	38.3	-56	Maxibor	MS	7/28/2011	
95.16	33.2	-56.3	Maxibor	MS	7/28/2011		221.01	38.3	-56.1	Maxibor	MS	7/28/2011	
98.23	33.4	-56.3	Maxibor	MS	7/28/2011		224.08	38.4	-56	Maxibor	MS	7/28/2011	
101.30	33.5	-56.2	Maxibor	MS	7/28/2011		227.15	38.5	-56	Maxibor	MS	7/28/2011	
104.37	33.7	-56.2	Maxibor	MS	7/28/2011		230.22	38.6	-56	Maxibor	MS	7/28/2011	
107.44	33.9	-56.2	Maxibor	MS	7/28/2011		233.29	38.7	-55.9	Maxibor	MS	7/28/2011	
110.51	34.1	-56.1	Maxibor	MS	7/28/2011		236.36	38.9	-55.9	Maxibor	MS	7/28/2011	
113.58	34.2	-56.1	Maxibor	MS	7/28/2011		239.43	39.1	-55.8	Maxibor	MS	7/28/2011	
116.65	34.3	-56	Maxibor	MS	7/28/2011		242.50	39.2	-55.8	Maxibor	MS	7/28/2011	
119.72	34.5	-56.1	Maxibor	MS	7/28/2011		245.57	39.3	-55.8	Maxibor	MS	7/28/2011	
122.78	34.6	-56.1	Maxibor	MS	7/28/2011		248.64	39.4	-55.9	Maxibor	MS	7/28/2011	
							251.71	39.5	-55.9	Maxibor	MS	7/28/2011	

Drill Hole Log - Down Hole Survey

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Dist (m)	Azimuth	Dip	Method	By	Date	Comments	Dist (m)	Azimuth	Dip	Method	By	Date	Comments
254.78	39.6	-55.9	Maxibor	MS	7/28/2011		380.63	44.5	-56.1	Maxibor	MS	7/28/2011	
257.85	39.6	-55.9	Maxibor	MS	7/28/2011		383.70	44.7	-56.2	Maxibor	MS	7/28/2011	
260.92	39.8	-55.9	Maxibor	MS	7/28/2011		386.77	44.8	-56.1	Maxibor	MS	7/28/2011	
263.99	40	-56	Maxibor	MS	7/28/2011		389.84	44.9	-56.2	Maxibor	MS	7/28/2011	
267.06	40.1	-56	Maxibor	MS	7/28/2011		392.91	45	-56.3	Maxibor	MS	7/28/2011	
270.13	40.2	-56	Maxibor	MS	7/28/2011		395.98	45.2	-56.2	Maxibor	MS	7/28/2011	
273.20	40.4	-56	Maxibor	MS	7/28/2011		399.05	45.3	-56.2	Maxibor	MS	7/28/2011	
276.27	40.5	-56	Maxibor	MS	7/28/2011		402.12	45.4	-56.2	Maxibor	MS	7/28/2011	
279.34	40.6	-56	Maxibor	MS	7/28/2011		405.19	45.6	-56.2	Maxibor	MS	7/28/2011	
282.41	40.8	-56	Maxibor	MS	7/28/2011		408.26	45.7	-56.2	Maxibor	MS	7/28/2011	
285.47	40.9	-56.1	Maxibor	MS	7/28/2011		411.33	45.9	-56.3	Maxibor	MS	7/28/2011	
288.54	41	-56.1	Maxibor	MS	7/28/2011		414.40	46.1	-56.2	Maxibor	MS	7/28/2011	
291.61	41.2	-56.1	Maxibor	MS	7/28/2011		417.47	46.2	-56.2	Maxibor	MS	7/28/2011	
294.68	41.4	-56.1	Maxibor	MS	7/28/2011		420.54	46.4	-56.2	Maxibor	MS	7/28/2011	
297.75	41.5	-56.2	Maxibor	MS	7/28/2011		423.61	46.6	-56.1	Maxibor	MS	7/28/2011	
300.82	41.6	-56.2	Maxibor	MS	7/28/2011		426.68	46.8	-56.1	Maxibor	MS	7/28/2011	
303.89	41.7	-56.2	Maxibor	MS	7/28/2011		429.75	47	-56.1	Maxibor	MS	7/28/2011	
306.96	41.8	-56.2	Maxibor	MS	7/28/2011		432.82	47.3	-56.1	Maxibor	MS	7/28/2011	
310.03	41.9	-56.2	Maxibor	MS	7/28/2011		435.89	47.6	-55.9	Maxibor	MS	7/28/2011	
313.10	42	-56.2	Maxibor	MS	7/28/2011		438.96	47.7	-55.9	Maxibor	MS	7/28/2011	
316.17	42.1	-56.2	Maxibor	MS	7/28/2011		442.03	47.9	-55.8	Maxibor	MS	7/28/2011	
319.24	42.2	-56.2	Maxibor	MS	7/28/2011		445.09	48.1	-55.7	Maxibor	MS	7/28/2011	
322.31	42.3	-56.2	Maxibor	MS	7/28/2011		448.16	48.3	-55.7	Maxibor	MS	7/28/2011	
325.38	42.4	-56.3	Maxibor	MS	7/28/2011		451.23	48.5	-55.6	Maxibor	MS	7/28/2011	
328.45	42.5	-56.3	Maxibor	MS	7/28/2011		454.30	48.6	-55.5	Maxibor	MS	7/28/2011	
331.52	42.6	-56.3	Maxibor	MS	7/28/2011		457.37	48.8	-55.3	Maxibor	MS	7/28/2011	
334.59	42.7	-56.3	Maxibor	MS	7/28/2011		460.44	48.9	-55.2	Maxibor	MS	7/28/2011	
337.66	42.7	-56.3	Maxibor	MS	7/28/2011		463.51	49.1	-55.1	Maxibor	MS	7/28/2011	
340.73	42.8	-56.3	Maxibor	MS	7/28/2011		466.58	49.3	-55.1	Maxibor	MS	7/28/2011	
343.80	42.9	-56.3	Maxibor	MS	7/28/2011		469.65	49.4	-55.1	Maxibor	MS	7/28/2011	
346.87	43.1	-56.3	Maxibor	MS	7/28/2011		472.72	49.6	-55	Maxibor	MS	7/28/2011	
349.94	43.2	-56.4	Maxibor	MS	7/28/2011		475.79	49.8	-55	Maxibor	MS	7/28/2011	
353.01	43.4	-56.4	Maxibor	MS	7/28/2011		478.86	49.9	-54.9	Maxibor	MS	7/28/2011	
356.08	43.6	-56.4	Maxibor	MS	7/28/2011		481.93	50.1	-54.8	Maxibor	MS	7/28/2011	
359.15	43.8	-56.4	Maxibor	MS	7/28/2011		485.00	50.2	-54.7	Maxibor	MS	7/28/2011	
362.22	43.9	-56.3	Maxibor	MS	7/28/2011		491.00	50.3	-54.4	Maxibor	MS	7/28/2011	
365.28	44.1	-56.4	Maxibor	MS	7/28/2011								
368.35	44.2	-56.4	Maxibor	MS	7/28/2011								
371.42	44.4	-56.4	Maxibor	MS	7/28/2011								
374.49	44.5	-56.3	Maxibor	MS	7/28/2011								
377.56	44.5	-56.2	Maxibor	MS	7/28/2011								

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
0.00	11.60	Casing Casing. No core.									
11.60	15.42	Basalt Lapilli and Ash Tuff: Chlorite; Quartz; Albite Dark greenish grey, basaltic lapilli ash tuff, with dark ashy matrix with lighter coloured larger (1-3mm) fragments. Some quartz veins cut through the core at various angles to core axis. Quite hard with 25% silicification. Moderate chlorite alteration at 50%. Distinct fabric at ~35 TCA. Lower contact at 45 TCA.									
15.42	20.43	Basalt Lapilli and Ash Tuff: Siliceous; Quartz Vein; Epidote Basaltic lapilli ash tuff, essentially as 11.60-15.42m but less banding and intense silicification (80%). Medium grey colour. Still mostly ashy matrix with the odd piece of lapilli. Occasional 1-4cm chlorite veins cut through the core at various angles to core axis and sometimes host epidote. Quartz is found in veins and irregular masses. Occasional fractures contain ~2% pyrite along the plane. Lower contact at 45 TCA.									
20.43	37.26	Basalt Lapilli and Ash Tuff: Siliceous; Chlorite; Epidote A highly variable unit with a mix of dark greenish grey chlorite altered basalt and a medium grey silicified basalt. Introduction of crackle fracture chlorite-albite veins with narrow alteration envelopes (1-3mm) found throughout the lithology. 27-28m is an exceptionally short run. Some stringers of pyrite ~1%. 25-27.40m has fabric 45 TCA. By 32m the fabric is at 50 TCA. Chlorite rich sections of core are found at 27.40-28.27; 32.73-33.31m. Localised blotches of epidote 33.31-34.52m. Lower contact in broken core. Lower contact is in a fault zone.									
37.26	37.92	Fault: Chlorite Small fault, highly fractured with lots of chlorite gouge material.									
37.92	67.49	Basalt Lapilli and Ash Tuff: Epidote; Chlorite; Quartz Dark grey basaltic lapilli ash tuff, with large spots, blotches, minor banding of epidote. Same variable texture as above units, dark ash matrix with occasional light grey 1-3mm lapilli. Epidote is usually associated with silica and is hard. Occasional association with chlorite veins +/- pyrite +/- magnetite. 37.92-43.00m is strongly magnetic, then fades back to patchy magnetism. Fabric is swirly and is intermittent ranging from 15-50 TCA. From 59.00-67.49m silicification increases (70%) starting with large quartz veins gradually turning into ropey bands of silica. Lower contact at 60 TCA.									
50.00	51.00	Basalt Lapilli and Ash Tuff: Chlorite Highly fractured area.									
60.17	61.00	Basalt Lapilli and Ash Tuff: Chlorite Highly fractured area.									
67.49	84.10	Dacite Tuff, Undivided: Banded; Siliceous									

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
		Moderate to light grey colour. Dacite tuff is undivided with various ash and lapilli dominate sections. 67.48-74.00m has ropey banded silica as well as large chunks (1-1.5cm). Bands vary in width (2-10mm) and silica alteration is 80% in these areas. 74.00-84.10m has 60% silica and is slightly darker. Some epidote altered knots of silica intermittent with banding. Upper contact at 60 TCA. Lower contact at 35 TCA. Fabric varies from 50-65 TCA.									
84.10	85.81	Dacite Lapilli Tuff: Siliceous; Epidote Moderate to light grey dacitic lapilli tuff. 70% silicification. Some brecciated lapilli no larger than 1cm. 15cm of epidote +/- pyrite near 85.81 contact. No banding compared to upper and lower lithologies. Some pyrite around knots of quartz. Lower contact at 15 TCA.									
85.81	102.86	Dacite Flow: Banded; Siliceous Moderate to dark grey chaotically banded dacitic flow. 70% silicification from 85.81-87.32m. Banding fades in some places but always present (darker colour and much less quartz 10-20%) from 94-102m. Felsic fragments. Maybe just feldspar phenocrysts(?) 2-4mm occasionally seen. The rest of the unit has 40% silica alteration. Chlorite is found with knots of quartz +/- pyrite as well as stringers. Fabric is at 50 TCA. Lower contact gradational.									
102.86	147.23	Rhyolite Flow: Banded; Siliceous; Epidote Light to medium grey rhyolitic flow. Texture is highly variable with no sharp contacts between ash and lapilli tuffs. The unit is intensely silicified throughout. Quartz veins frequently cut the core at random angles to core axis. Chlorite-albite veins are common. ~15% sericite seen in some higher alteration areas (114-123m). Chaotic banding is common except on intensely silicified areas such as 102.86-116.75m. An increase in epidote veins 121.09-126.39; 131.29-132.39m. The latter interval contains garnet alteration and pyrite (2-3%). Upper contact gradational. Lower contact is 25 TCA.									
147.23	153.95	Feldspar-phyric mafic dyke: Quartz Light-medium grey feldspar-phyric mafic dyke. Sharp upper contact at 25 TCA. This is a quartz feldspar porphyry. Large grains of feldspar are 1-3mm in sized and come in many forms (laths to subhedral) of crystals. This unit stands out from the surrounding lithologies. Small dark crystals believed to be hornblende are somewhat sheared but a few euhedral shaped crystals remain. The unit is somewhat silicified with 25% pervasive siliceous alteration. The lower contact is in broken core.									
153.95	300.11	Basalt Intrusion: Epidote; Quartz; Chlorite Medium to dark greenish grey mafic intrusion. Texture is highly variable and depends on the amount of chlorite, silica, and epidote alteration. There is also a patchy brownish colour on some of the core biotization(?). Silica and epidote are found in patches and sometimes bands. Zones of siliceous alteration that include knots of quartz are: 162.46-164.19; 176.13-181.79; 192.00-194.38; 211.55-211.75; 213.00-235.00; 220.03-221.43; 223.59-223.78; 226.36-226.48; 228.88-237.73; 257.44-257.72; 258.67-259.00; 259.54-260.23; 266.45-268.00m). Occasionally blotches	298.61	300.11	1.5	7601	0.06	0.4			0.01

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
		of garnet alteration appear in the epidote-quartz alteration. In the less altered areas subhedral hornblende 1-3mm in size are seen. Chlorite veins +/- epidote +/- quartz +/- pyrite (1-2%) are found at random angles TCA. Overall alteration includes silica 60-70%; epidote 20%; chlorite 10-15%; garnet 3%. Pyrrhotite (~1%) is seen in a quartz-chlorite-epidote vein at 186.14m. Epidote patches occur from 154.45-155.55; 156.22-156.47; 160.00-166.00; 170.00-170.81; 176.13-176.31; 197.7-198.33; 216.34-216.70; 209.34-209.86; 222.94-223.95; 283.00-291.42m.									
191.34	192.05	Basalt Intrusion: Epidote; Quartz; Pyrite Highly fractured rock.									
192.05	192.60	Basalt Intrusion: Siliceous Lighter grey colour due to silicification increasing to 75%. Also has 15% chloritization and is highly fractured.									
192.60	197.69	Basalt Intrusion: Siliceous Lighter grey colour due to silicification increasing to 75%. Also has 15% chloritization.									
198.17	200.00	Basalt Intrusion: Jasper; Chlorite Highly fractured rock.									
201.75	202.00	Basalt Intrusion: Chlorite; Pyrite Highly fractured rock.									
206.59	210.64	Basalt Intrusion: Chlorite; Epidote Highly fractured rock.									
285.00	300.11	Basalt Intrusion: Chlorite; Epidote; Quartz More intensely altered BIN. Pervasive chlorite alteration (45%), epidote (25%), and quartz (30%). Quartz is found in knots or bands and is almost always accompanied by epidote. There may also be mottled biotite alteration. Extensive epidote flooding at 295.68-296.5m									
300.11	302.26	Quartz Sericite Pyrite Alteration: Rhyolite Ash Tuff; Chlorite Light greenish grey with a brownish hue QSP rhyolitic ash tuff. High amounts of silica alteration (70%). 1-1.5cm pieces of subrounded silica are frequent throughout the core and are separated by mafic exhalative ash. Some disseminated pyrite (1-2%). Chlorite alteration is pervasive at 40%, Sericite at 5%. There appears to be traces of honey brown sphalerite at 301.68m. Fabric cannot be measured as it swirls and twists over a short distance. Upper contact at 30 TCA. Lower contact at 50 TCA.	300.11	301.61	1.5	7602	1.08	19.6	0.05	0.13	0.20
			301.61	302.26	0.65	7603	0.08	1.8	0.02	0.03	0.05
302.26	311.75	Basalt Intrusion: Chlorite; Siliceous; Epidote Dark greenish grey basaltic intrusion. Variable texture with swirls, blotches, wisps and occasional banding of alteration chlorite (50%), silica (70%), epidote (8%). Some of the blotches of epidote +/- silica +/- chlorite contain pyrite ~2% and occasionally pyrrhotite (0.5%). In some less altered sections sub euhedral hornblende crystals can be seen from 308.85- 311.75m.	302.26	303.05	0.79	7604	0.04	0.4			
			303.05	303.81	0.76	7605	0.08	0.6	0.01	0.01	0.02
			303.81	305.31	1.5	7606	0.05	0.2			
			305.31	306.81	1.5	7607	0.05	<0.2			0.02
			306.81	308.31	1.5	7608	0.05	0.2	0.01		
		Rhyolite Lapilli and Ash Tuff									

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From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
		Small unit of highly siliceous rock with crackle fracture chlorite veins cutting through knots of quartz. Is generally a lot more felsic in this area. Upper contact at 60 TCA. Lower contact destroyed by broken core.	308.31	309.81	1.5	7609	0.04	<0.2			0.01
			309.81	310.81	1	7610	0.04	<0.2			
			310.81	311.75	0.94	7611	0.06	<0.2	0.01		0.01
311.75	313.61	Quartz Sericite Pyrite Alteration: Rhyolite Ash Tuff; Sphalerite; Pyrite Light grey QSP altered rhyolite ash tuff. Texture is variable exhalative ash with swirls and ribbons of silica. There is ~8% wispy pyrite, 8% shreds and wisps of red sphalerite, trace wispy chalcoppyrite 0.5-1%. Some variable fabric, sphalerite undulates and does not follow a general trend. Siliceous alteration at 75%, sericite alteration at 30%. Upper contact in broken core. Lower contact at 70 TCA.	311.75	313.00	1.25	7613	0.45	11.0	0.13	0.15	1.56
			313.00	313.61	0.61	7614	0.34	8.4	0.07	0.36	0.67
313.61	314.89	Dacite Ash Tuff: Quartz Sericite Pyrite Alteration Medium to dark greenish grey dacitic ash tuff. Texture is swirling with bands of ash interbedded with silica. Traces of coarse grained pyrite ~1%. Silica alteration is 60%, sericite alteration 10%, and chlorite alteration 50%. Upper contact at 70 TCA. Lower contact 30 TCA.	313.61	314.89	1.28	7615	0.09	<0.2			0.04
314.89	315.14	Quartz Sericite Pyrite Alteration: Rhyolite Ash Tuff QSP altered rhyolitic ash tuff, essentially the same as 311.75-313.61m but without red sphalerite and chalcoppyrite. Light grey colour. Texture is variable exhalative ash with swirls and ribbons of silica. There is 4% wispy pyrite. Some variable fabric. Siliceous alteration at 75%, sericite alteration at 30%. Upper contact at 35 TCA. Lower contact at 30 TCA.	314.89	315.89	1	7616	0.07	<0.2			0.03
315.14	316.80	Dacite Ash Tuff Dacitic ash tuff, essentially the same as 313.61-314.89m, except for introduction of occasional chlorite-albite veins. Medium to dark greenish grey colour. Texture is swirling with bands of ash interbedded with silica. Traces of coarse-grained pyrite ~1%. Silica alteration is 60%, sericite alteration 10%, and chlorite alteration 50%. Upper contact at 30 TCA. Lower contact convoluted at 80-90 TCA .	315.89	316.80	0.91	7617	0.08	0.4			0.04
316.80	317.36	Quartz Sericite Pyrite Alteration: Rhyolite Ash Tuff QSP altered rhyolitic ash tuff, essentially the same as 311.75-313.61m but without red sphalerite and chalcoppyrite. Light grey colour. Texture is variable exhalative ash with swirls and ribbons of silica. There is 4% wispy pyrite. Some variable fabric. Siliceous alteration at 75%, sericite alteration at 30%. Upper contact at ~80-90 TCA. Lower contact at 50 TCA.	316.80	317.36	0.56	7619	0.82	162.0	0.02	0.35	0.88
317.36	318.28	Basalt Ash Tuff: Magnetite; Chlorite Dark grey basaltic ash tuff. Texture is uniform ash with blotches and veins of chlorite alteration cutting at random angles to core axis. Trace amounts of pyrite (0.5-1%) are seen in the chlorite veins. Weak albite alteration envelopes occur around most of the chlorite veins. Strongly magnetic. Upper contact at 35 TCA. Lower contact 50 TCA.	317.36	318.28	0.92	7620	0.10	1.4			0.03
318.28	319.16	Quartz Sericite Pyrite Alteration: Rhyolite Ash Tuff									

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
		QSP altered rhyolitic ash tuff, essentially the same as 311.75-313.61m but with less red sphalerite (0.5%). Light grey colour. Texture is variable exhalative ash with swirls and ribbons of silica. There is ~4% wispy pyrite. Some variable fabric at 50 TCA. Siliceous alteration at 75%, sericite alteration at 30%. Upper contact at 50 TCA. Lower contact at 20 TCA.	318.28	319.16	0.88	7621	0.21	7.2	0.01	0.04	0.14
319.16	319.94	Basalt Ash Tuff: Basalt Dyke Mafic ash tuff or dyke?, essentially the same as 317.36-318.28m. Dark grey colour. Texture is uniform ash with blotches and veins of chlorite alteration cutting at random angles to core axis. Trace amounts of pyrite (0.5-1%) are seen in the chlorite veins. Weak albite alteration envelopes occur around most of the chlorite veins. Moderately magnetic. Upper contact at 20 TCA. Lower contact 25 TCA.	319.16	319.94	0.78	7622	0.12	1.2			0.04
319.94	333.28	Quartz Sericite Pyrite Alteration: Rhyolite Lapilli and Ash Tuff; Diabase Light greenish grey ash and a few pieces of felsic subangular lapilli under 1cm in size. Ribbons and convoluted silica is common along most of the unit but some areas have been quartz flooded (331.43-332.00m). Pervasive silica alteration is 75%, sericite increases to 40-50% with wisps of pyrite ~5%. There is a trace of calcite along some of the quartz knots. Variable fabric hard to measure accurately due to wavy convoluted texture. At 326.73m a fabric of 70 TCA. Upper contact at 25 TCA. Lower contact is gradational (?) with a diabase sill, therefore protolith could be a DIAB instead of an RLAT.	319.94	321.44	1.5	7623	0.63	20.6	0.02	0.16	0.33
			321.44	322.94	1.5	7625	0.15	5.0		0.04	0.09
			322.94	324.44	1.5	7626	0.11	9.4		0.07	0.18
			324.44	325.94	1.5	7627	0.10	1.8			0.06
			325.94	327.44	1.5	7628	0.07	0.6			0.14
			327.44	328.94	1.5	7629	0.11	1.0			0.12
			328.94	330.44	1.5	7630	0.44	2.4			0.02
			330.44	331.94	1.5	7631	0.54	3.8		0.01	0.10
			331.94	333.28	1.34	7632	0.45	18.4	0.03	0.06	0.37
333.28	361.40	Diabase: Siliceous; Chlorite; Epidote Medium grey with patches of lighter and darker areas depending on amount of siliceous alteration. Texture consists of convoluted bands of light (silica) and dark (diabase) throughout the unit. Fabric is observed from 60-90 TCA. Patches of silica are seen often and usually have epidote alteration in them as well. Chlorite-albite veins are seen cutting through the core at random angles to core axis. Knots of silica are seen up to 30cm in size. Siliceous alteration 70%, epidote 5%, chlorite 20%. The unit is weak to moderately magnetic throughout. Upper contact gradational. Lower contact in broken core.	333.28	334.78	1.5	7633	0.15	<0.2			0.02
350.25	356.24	Diabase: Siliceous; Chlorite Area of highly fractured rock.									
361.40	366.43	Fault: Bleached Highly fractured area with fault gouge material. Occasional larger pieces of core up to 20cm and are heavily silicified. Softer material is highly chloritised and bleached.									
366.43	388.14	Diabase: Siliceous; Chlorite; Epidote Medium grey with patches of lighter and darker areas depending on amount of siliceous alteration. Texture consists of convoluted bands of light (silica) and dark (diabase) throughout the unit. Fabric is observed around 30 TCA. Patches of silica are seen often and usually have	386.64	388.14	1.5	7634	0.15	<0.2			

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
		epidote alteration in them as well. Chlorite-quartz stringers are seen cutting through the core at random angles to core axis. Knots of silica are seen up to 30cm in size. Siliceous alteration 70%, epidote 5%, chlorite 20%. The unit is weak to moderately magnetic throughout. Upper contact in broken core. Lower contact at 45 TCA.									
388.14	408.85	Quartz Sericite Pyrite Alteration									
		Light grey QSP altered rocks. Texture is highly variable from strong white quartz (80%) and yellow sheeted sericite (20%) alterations. Alternating strong undulating banding (50 TCA) into seemingly random blotches of silica where no measurements can be taken. Protolith cannot be determined. Minimal pyrite is seen (~1-5%) usually disseminated but a few wisps and shreds are seen. A dark band of mafic material is seen at 401.64-401.86m. Upper contact at 45 TCA. Lower contact in broken core and cannot be measured.	388.14	389.64	1.5	7635	0.17	1.2			
			389.64	391.14	1.5	7636	0.30	1.4			
			391.14	392.64	1.5	7637	0.15	1.8			0.01
			392.64	394.14	1.5	7639	0.16	1.2			
			394.14	395.64	1.5	7640	0.17	1.8			
			395.64	397.14	1.5	7641	0.22	3.8			
		406.30 413.52 Diabase	397.14	398.64	1.5	7643	0.13	1.8			
		Moderate to highly fractured, minor shear zone.	398.64	400.14	1.5	7644	0.21	4.0			
			400.14	401.64	1.5	7645	0.25	7.0		0.03	0.05
			401.64	403.14	1.5	7646	0.10	1.4			
			403.14	404.64	1.5	7647	0.10	<0.2			
			404.64	406.14	1.5	7648	0.14	1.0			
			406.14	407.64	1.5	7649	0.28	2.2		0.01	0.02
			407.64	408.85	1.21	7650	0.23	2.2		0.01	0.02
408.85	423.93	Diabase: Chlorite; Magnetite; Hematite									
		Medium to dark grey diabase. Texture is much more granular and crystalline due to less silicification (10%). What appears to be small feldspar phenocrysts (1-2mm) are seen. The core is rather soft. Higher chlorite alteration (50%) can explain this. Spots and blotches of hematite and magnetite are seen (2-4mm). The occasional chlorite vein cuts through the core. A few swirls and small knots of silica are seen in the lower 10m of the lithology and also contain epidote (5%). Weak patchy magnetism throughout the unit. Both contacts are destroyed in broken core.	408.85	410.35	1.5	7651	0.09	0.4			
		421.00 423.93 Diabase									
		Highly fractured core; shearing.									
423.93	436.09	Dacite Tuff, Undivided: Quartz Vein; Epidote									
		Medium grey dacite tuff with lighter green coloured quartz-epidote stringers cutting at random angles to core axis. This unit contains some weak wavy bands at 50-60 TCA that fade in and out according to amount of alteration. Heavy pervasive silicification at 75% throughout. In addition quartz knots are seen frequently and as well as epidote (10%) Upper contact in broken core. Moderately magnetic. Lower contact at 40 TCA.									
436.09	439.71	Basalt Dyke									
		Dark greenish grey basaltic dyke. Texture is granular with 1-2mm sized grains. Some quartz-epidote-chlorite veins cut through the unit at random angles TCA. Not magnetic. Rarely a subhedral hornblende crystal can be seen. Upper contact at 40 TCA. Lower contact at 50 TCA.									

From	To (m)		From	To (m)	Int	Sa No.	Au g/T	Ag g/T	Cu %	Pb %	Zn %
439.71	441.87	Dacite Tuff, Undivided: Chlorite Dacitic tuff, essentially like 423.93-436.09m. Medium grey with lighter green coloured quartz-epidote stringers cutting at random angles to core axis. This unit contains some weak wavy bands at 50-60 TCA that fade in and out according to amount of alteration. Heavy pervasive silicification at 75% at the start of the lithology but after a small shear at 441.25m chloritization increases to 75% and silicification drops to 10%. The texture becomes more granular (1-2mm) and filled with small crystals of feldspar. Quartz knots are seen occasionally near the top of the lithology as well as epidote (10%) Upper contact at 50 deg. Patchy moderate magnetism. Lower contact at 80 TCA.									
441.87	498.00	Dacite Tuff, Undivided: Chlorite; Siliceous Medium grey dacitic tuff with occasional lighter green coloured quartz-epidote stringers cutting at random angles to core axis. This unit contains wavy bands at 20-60 TCA. Heavy pervasive silicification at 75% throughout. In addition quartz knots are seen occasionally and as well as epidote (5%). Seldom seen blebs of pyrite 0.5% and swirls of magnetite. Weakly magnetic. From 468-498m Some slices of basaltic dyke appear in the core and are usually ~15-20cm across. 483.28-485.70m an increase of chlorite alteration as well as pyrite wisps (~1-4%). Upper contact at 80 TCA. Lower contact at 40 TCA.									
498.00	498.00	End of Hole End of hole.									

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Sample No.	From	To (m)	Int	Au g/T MFA	Au g/T	Ag g/T	Cu %	Pb %	Zn %	As %	SG g/cm3	Ag ppm	AL %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm
7601	298.61	300.11	1.5		0.060							0.4	3.52	10	392	<1.0	15	1.76	<1.0	25	46	76
7602	300.11	301.61	1.5		1.080	19.60	0.050	0.130	0.200		2.59	19.4	1.16	5	120	<1.0	<5	0.45	10.0	6	6	530
7603	301.61	302.26	0.65		0.080							1.8	1.72	5	218	<1.0	10	1.76	3.0	16	56	228
7604	302.26	303.05	0.79		0.040							0.4	1.49	5	138	<1.0	5	1.51	<1.0	20	80	68
7605	303.05	303.81	0.76		0.080							0.6	0.70	<5	108	<1.0	<5	0.84	<1.0	9	18	110
7606	303.81	305.31	1.5		0.050							0.2	2.17	5	240	<1.0	10	1.63	<1.0	28	98	82
7607	305.31	306.81	1.5		0.050							<0.2	2.90	<5	420	<1.0	10	1.10	<1.0	26	126	36
7608	306.81	308.31	1.5		0.050							0.2	2.54	5	250	<1.0	10	1.12	<1.0	43	136	118
7609	308.31	309.81	1.5		0.040							<0.2	2.91	5	244	<1.0	10	1.49	<1.0	27	112	38
7610	309.81	310.81	1		0.040							<0.2	2.78	5	234	<1.0	15	1.07	<1.0	27	116	36
7611	310.81	311.75	0.94		0.060							<0.2	3.01	10	326	<1.0	15	1.27	<1.0	41	106	104
7613	311.75	313.00	1.25		0.450	11.00	0.130	0.150	1.560		2.75	10.4	1.06	130	36	<1.0	10	0.44	79.0	12	6	1250
7614	313.00	313.61	0.61		0.340							8.4	1.23	95	30	<1.0	20	1.26	28.0	5	<2	662
7615	313.61	314.89	1.28		0.090							<0.2	2.28	5	378	<1.0	<5	0.85	<1.0	5	4	12
7616	314.89	315.89	1		0.070							<0.2	1.70	5	348	<1.0	<5	0.73	<1.0	3	4	8
7617	315.89	316.80	0.91		0.080							0.4	1.93	5	898	<1.0	<5	0.75	<1.0	3	4	14
7619	316.80	317.36	0.56		0.820	162.00	0.020	0.350	0.880		2.69	>50.0	0.75	10	60	<1.0	<5	0.63	42.0	15	4	214
7620	317.36	318.28	0.92		0.100							1.4	4.43	30	730	<1.0	35	2.21	<1.0	32	14	62
7621	318.28	319.16	0.88		0.210							7.2	1.23	10	68	<1.0	5	0.96	6.0	9	6	108
7622	319.16	319.94	0.78		0.120							1.2	6.31	20	490	<1.0	30	2.65	<1.0	49	260	46
7623	319.94	321.44	1.5		0.630							20.6	1.69	20	34	<1.0	15	2.28	12.0	12	28	156
7625	321.44	322.94	1.5		0.150							5.0	0.51	10	46	<1.0	5	0.46	3.0	5	<2	36
7626	322.94	324.44	1.5		0.110							9.4	0.49	15	38	<1.0	10	0.42	6.0	7	2	58
7627	324.44	325.94	1.5		0.100							1.8	0.60	10	134	<1.0	<5	0.90	3.0	8	4	14
7628	325.94	327.44	1.5		0.070							0.6	1.00	5	124	<1.0	<5	0.67	5.0	6	4	10
7629	327.44	328.94	1.5		0.110							1.0	0.57	15	80	<1.0	5	0.75	3.0	5	6	12
7630	328.94	330.44	1.5		0.440							2.4	0.50	20	24	<1.0	15	0.44	<1.0	5	<2	16
7631	330.44	331.94	1.5		0.540							3.8	0.42	10	76	<1.0	<5	0.80	1.0	3	4	18
7632	331.94	333.28	1.34		0.450							18.4	0.56	25	112	<1.0	<5	1.83	16.0	8	4	274
7633	333.28	334.78	1.5		0.150							<0.2	1.66	<5	148	<1.0	<5	1.35	<1.0	3	6	8
7634	386.64	388.14	1.5		0.150							<0.2	2.54	<5	92	<1.0	<5	1.27	<1.0	5	<2	4
7635	388.14	389.64	1.5		0.170							1.2	0.92	5	68	<1.0	<5	0.95	<1.0	4	<2	64
7636	389.64	391.14	1.5		0.300							1.4	1.10	5	56	<1.0	5	1.06	<1.0	5	<2	30
7637	391.14	392.64	1.5		0.150							1.8	0.59	10	56	<1.0	5	0.56	<1.0	5	<2	14
7639	392.64	394.14	1.5		0.160							1.2	0.60	10	90	<1.0	<5	0.28	<1.0	3	<2	8
7640	394.14	395.64	1.5		0.170							1.8	0.77	10	82	<1.0	<5	0.42	<1.0	3	4	12
7641	395.64	397.14	1.5		0.220							3.8	0.66	10	72	<1.0	<5	0.30	<1.0	3	4	14
7643	397.14	398.64	1.5		0.130							1.8	1.07	10	70	<1.0	<5	0.63	<1.0	3	4	12
7644	398.64	400.14	1.5		0.210							4.0	0.68	15	102	<1.0	<5	0.40	<1.0	3	4	12
7645	400.14	401.64	1.5		0.250							7.0	0.42	25	72	<1.0	<5	0.24	1.0	3	4	56
7646	401.64	403.14	1.5		0.100							1.4	1.33	15	88	<1.0	5	0.74	<1.0	6	4	28
7647	403.14	404.64	1.5		0.100							<0.2	1.11	5	90	<1.0	<5	1.00	<1.0	3	4	8
7648	404.64	406.14	1.5		0.140							1.0	0.63	5	98	<1.0	5	0.91	<1.0	3	<2	12
7649	406.14	407.64	1.5		0.280							2.2	0.36	20	54	<1.0	<5	0.28	<1.0	3	2	22
7650	407.64	408.85	1.21		0.230							2.2	0.37	15	86	<1.0	<5	0.23	<1.0	3	4	24
7651	408.85	410.35	1.5		0.090							0.4	1.61	5	86	<1.0	10	1.54	<1.0	5	4	16

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Sample No.	Fe %	Hg ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ti %	U ppm	V ppm	W ppm	Y ppm	Zn ppm
7601	4.14	<5	1.29	<2	12	1.70	505	2	0.45	23	740	54	0.16	<5	8	<10	<5	118	0.23	<5	196	<5	4	138
7602	1.58	<5	0.51	4	6	0.52	185	1	0.15	5	350	1284	0.42	50	4	<10	<5	38	0.08	<5	38	<5	6	2038
7603	2.62	<5	0.53	2	8	0.78	420	<1	0.22	21	790	255	0.55	5	9	<10	<5	60	0.14	<5	106	<5	6	510
7604	2.79	<5	0.46	<2	6	0.95	490	1	0.23	31	700	24	0.40	<5	8	<10	<5	50	0.18	<5	118	<5	4	76
7605	1.04	<5	0.15	2	4	0.31	230	1	0.15	7	260	111	0.31	<5	3	<10	<5	38	0.07	<5	32	<5	4	150
7606	3.39	<5	0.91	<2	10	1.34	560	1	0.26	41	710	27	0.54	<5	8	<10	<5	52	0.20	<5	142	<5	4	92
7607	3.67	<5	1.84	<2	16	2.29	665	2	0.25	43	750	21	0.10	<5	8	<10	<5	42	0.25	<5	154	<5	4	238
7608	3.80	<5	1.50	<2	14	2.03	610	1	0.24	49	760	18	0.75	<5	8	<10	<5	44	0.23	<5	148	<5	5	72
7609	3.59	<5	1.72	<2	16	2.36	760	2	0.22	42	750	24	0.17	<5	9	<10	<5	60	0.25	<5	156	<5	5	104
7610	4.14	<5	1.64	<2	14	2.25	765	2	0.24	42	810	18	0.19	<5	8	<10	<5	72	0.25	<5	170	<5	5	84
7611	4.37	<5	1.95	<2	16	2.43	680	1	0.23	57	810	24	0.73	<5	7	<10	<5	96	0.27	<5	152	<5	4	114
7613	3.43	15	0.35	2	4	0.29	110	9	0.11	5	190	1407	4.20	180	1	<10	<5	76	0.02	<5	12	<5	3	>10000
7614	4.70	5	0.44	2	4	0.31	365	5	0.16	1	240	3594	5.52	90	2	<10	<5	62	0.03	<5	10	<5	6	6704
7615	1.78	<5	1.10	4	12	0.93	365	1	0.25	2	260	27	0.39	<5	3	<10	<5	46	0.09	<5	70	<5	7	418
7616	1.27	<5	0.63	4	8	0.46	165	<1	0.21	1	280	27	0.43	<5	2	<10	<5	56	0.08	<5	60	<5	5	336
7617	1.39	<5	0.79	4	10	0.72	230	1	0.24	1	260	18	0.09	<5	3	<10	<5	80	0.11	<5	124	<5	5	386
7619	1.75	<5	0.36	4	4	0.30	185	5	0.10	2	250	3366	2.19	20	2	40	<5	142	0.06	<5	32	<5	7	8868
7620	7.48	<5	1.58	4	28	2.35	705	2	0.32	13	4100	54	0.45	5	12	<10	<5	106	0.59	<5	206	<5	13	296
7621	2.44	<5	0.37	4	6	0.30	175	4	0.15	4	380	375	2.49	<5	2	<10	<5	46	0.05	<5	10	<5	5	1402
7622	6.12	<5	2.88	2	36	3.59	1095	2	0.37	137	1520	42	0.62	5	10	<10	<5	98	0.61	<5	176	<5	5	382
7623	4.16	<5	0.77	2	10	0.83	435	3	0.17	15	450	1587	4.32	30	5	<10	<5	86	0.10	<5	38	<5	4	3342
7625	2.96	<5	0.33	4	2	0.14	75	3	0.06	<1	330	417	3.38	10	1	<10	<5	10	0.03	<5	4	<5	5	894
7626	3.17	<5	0.31	4	2	0.11	60	2	0.05	2	350	723	3.62	15	1	<10	<5	8	0.04	<5	4	<5	5	1754
7627	1.57	<5	0.32	6	4	0.19	180	1	0.07	2	310	42	1.54	<5	1	<10	<5	16	0.06	<5	18	<5	5	586
7628	0.99	<5	0.47	6	6	0.31	210	<1	0.12	3	350	15	0.60	<5	2	<10	<5	18	0.08	<5	14	<5	5	1398
7629	2.46	<5	0.33	4	4	0.13	170	5	0.08	2	340	21	2.88	<5	1	<10	<5	14	0.03	<5	4	<5	4	1244
7630	4.25	<5	0.29	6	2	0.08	70	6	0.06	6	320	30	4.64	<5	<1	<10	<5	10	<0.01	<5	<2	<5	3	174
7631	2.34	<5	0.25	4	2	0.08	110	20	0.07	1	310	120	2.76	<5	1	<10	<5	12	0.02	<5	4	<5	4	958
7632	1.64	<5	0.29	4	4	0.13	255	1	0.09	6	290	582	2.11	65	1	10	<5	26	0.03	<5	40	<5	5	3748
7633	1.19	<5	0.59	4	8	0.37	275	1	0.20	<1	320	18	0.03	<5	2	<10	<5	32	0.09	<5	12	<5	4	178
7634	1.36	<5	0.94	6	14	1.08	900	1	0.14	2	200	18	0.07	<5	2	<10	<5	82	0.11	<5	4	<5	4	72
7635	1.88	<5	0.34	12	6	0.27	280	2	0.04	1	260	15	1.97	<5	<1	<10	<5	32	0.03	<5	2	<5	9	52
7636	2.43	<5	0.30	6	4	0.13	120	6	0.11	<1	330	24	2.87	<5	1	<10	<5	40	0.03	<5	<2	<5	8	50
7637	2.82	<5	0.29	12	2	0.10	100	4	0.05	<1	320	27	3.21	5	<1	<10	<5	24	<0.01	<5	<2	<5	6	100
7639	1.49	<5	0.28	6	<2	0.09	55	2	0.06	<1	160	9	1.69	<5	<1	<10	<5	24	<0.01	<5	<2	<5	5	44
7640	1.53	<5	0.31	6	2	0.10	90	2	0.08	<1	200	15	1.72	<5	<1	<10	<5	24	<0.01	<5	<2	<5	5	48
7641	1.82	<5	0.29	12	<2	0.10	70	2	0.06	<1	170	18	2.04	5	<1	<10	<5	18	<0.01	<5	<2	<5	4	46
7643	1.56	<5	0.29	4	4	0.20	150	2	0.12	<1	200	18	1.73	<5	<1	<10	<5	34	0.01	<5	<2	<5	4	72
7644	1.49	<5	0.33	10	2	0.14	95	2	0.05	<1	140	36	1.67	5	<1	<10	<5	20	<0.01	<5	<2	<5	5	92
7645	1.42	<5	0.21	8	<2	0.07	45	3	0.03	<1	60	312	1.57	15	<1	<10	<5	10	<0.01	<5	<2	<5	3	538
7646	2.30	<5	0.33	4	8	0.39	270	2	0.11	2	280	24	2.13	<5	2	<10	<5	30	0.04	<5	22	<5	6	60
7647	1.16	<5	0.34	8	6	0.33	235	5	0.09	<1	220	12	1.24	<5	<1	<10	<5	32	0.01	<5	<2	<5	7	52
7648	1.88	<5	0.30	16	6	0.22	220	2	0.02	<1	170	21	2.04	<5	<1	<10	<5	28	<0.01	<5	<2	<5	7	50
7649	1.70	<5	0.24	14	<2	0.07	75	2	0.02	<1	100	102	1.92	10	<1	<10	<5	10	<0.01	<5	<2	<5	3	232
7650	1.87	<5	0.27	14	<2	0.05	55	8	0.02	<1	40	117	2.07	10	<1	<10	<5	20	<0.01	<5	<2	<5	3	216
7651	2.97	<5	0.64	6	10	0.65	400	3	0.08	<1	180	21	2.07	<5	2	<10	<5	54	0.04	<5	6	<5	5	56

Sample No.	Lab	Cert MFA	Cert Assay	Cert ICP	Cert SG	Method MFA	Method Assay	Method ICP	Method SG	Date MFA	Date Assay	Date ICP	Date SG
7601	Ecotech		AK 2011-1637	AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	10/17/201
7602	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7603	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7604	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7605	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7606	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7607	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7608	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7609	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7610	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7611	Ecotech		AK 2011-1637	AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	10/17/201
7613	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7614	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7615	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7616	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7617	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7619	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7620	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7621	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7622	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7623	Ecotech		AK 2011-1637	AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	10/17/201
7625	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7626	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7627	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7628	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7629	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7630	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7631	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7632	Ecotech		AK 2011-1637	AK 2011-1637			FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201	
7633	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7634	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7635	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7636	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7637	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7639	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7640	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7641	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7643	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7644	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7645	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7646	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7647	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7648	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7649	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7650	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		
7651	Ecotech		AK 2011-1637	AK 2011-1637		FA/AA Finish	ICP: Aqua Regia Di			10/17/201	10/17/201		

Drill Hole Log - Ez-Shot Survey

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Dist (m)	Az Mag	Dip	Mag nT	Az True	Driller	Date	Dist (m)	Az Mag	Dip	Mag nT	Az True	Driller	Date
30.00	6.1	-57	5608	26.3	R. Coulombe	7/22/2011							
60.00	6.8	-56.7	5707	27	R. Coulombe	7/22/2011							
90.00	11.3	-56.25	5586	31.5	S. Bradley	7/23/2011							
120.00	9	-56.1	5660	29.2	R. Coulombe	7/23/2011							
150.00	21	-56.3	5453	41.2	Bad Az - R. Coulombe	7/23/2011							
180.00	12.5	-55.8	5724	32.7	S. Bradley	7/24/2011							
210.00	14.5	-55.8	5714	34.7	R. Coulombe	7/24/2011							
240.00	16	-55.8	5685	36.2	R. Coulombe	7/24/2011							
270.00	13.1	-55.9	5426	33.3	S. Bradley	7/25/2011							
300.00	16.7	-56.3	2570	36.9	S. Bradley	7/25/2011							
330.00	16.7	-56.3	5771	36.9	R. Coulombe	7/25/2011							
360.00	18.6	-56.2	5708	38.8	S. Bradley	7/26/2011							
390.00	18.8	-56.2	5712	39	R. Coulombe	7/26/2011							
420.00	19.4	-56.1	5694	39.6	R. Coulombe	7/26/2011							
450.00	27.2	-55.5	5526	47.4	S. Bradley	7/27/2011							
480.00	25.3	-54.8	5731	45.5	A. McPherson	7/27/2011							

Drill Hole Log - Rock Quality Determination

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From	To (m)	Int	Rec	Rec %	Rec >10cm	RQD	Comments	From	To (m)	Int	Rec	Rec %	Rec >10cm	RQD	Comments
11.61	12.00	3	0.39	13	0	0		135.00	138.00	3	2.92	97.33	1.5	50	
12.00	15.00	3	3.2	106.67	1.73	54.06		138.00	141.00	3	3.04	101.33	1.75	57.57	
15.00	18.00	3	2.31	77	0.32	10.67		141.00	144.00	3	2.98	99.33	1.66	55.33	
18.00	21.00	3	3.37	112.33	2.22	65.88		144.00	147.00	3	3.02	100.67	1.95	64.57	
21.00	24.00	3	2.34	78	0.94	31.33		147.00	150.00	3	2.76	92	0	0	
24.00	27.00	3	2.95	98.33	1.67	55.67		150.00	153.00	3	3.06	102	0.31	10.13	
27.00	30.00	3	2.01	67	1.11	37		153.00	156.00	3	2.76	92	0.39	13	
30.00	33.00	3	2.8	93.33	1.67	55.67		156.00	159.00	3	3.11	103.67	1.92	61.74	
33.00	36.00	3	2.91	97	2.3	76.67		159.00	162.00	3	2.97	99	1.39	46.33	
36.00	39.00	3	3.03	101	1.15	37.95		162.00	165.00	3	2.96	98.67	1.83	61	
39.00	42.00	3	3.02	100.67	1.48	49.01		165.00	168.00	3	3.03	101	2.36	77.89	
42.00	45.00	3	3.02	100.67	1.35	44.7		168.00	171.00	3	3.04	101.33	1.99	65.46	
45.00	48.00	3	2.47	82.33	1.02	34		171.00	174.00	3	3.07	102.33	1.9	61.89	
48.00	51.00	3	2.58	86	0.4	13.33		174.00	177.00	3	3.07	102.33	1.18	38.44	
51.00	54.00	3	2.9	96.67	1.59	53		177.00	180.00	3	3.01	100.33	1.32	43.85	
54.00	57.00	3	3.21	107	0.78	24.3		180.00	183.00	3	3.02	100.67	1.24	41.06	
57.00	60.00	3	3.02	100.67	1.29	42.72		183.00	186.00	3	3.09	103	1.52	49.19	
60.00	63.00	3	2.92	97.33	0.1	3.33		186.00	189.00	3	2.99	99.67	1.98	66	
63.00	66.00	3	2.83	94.33	1.7	56.67		189.00	192.00	3	3	100	1.44	48	
66.00	69.00	3	3.05	101.67	1.18	38.69		192.00	195.00	3	2.95	98.33	1.4	46.67	
69.00	72.00	3	2.75	91.67	1.14	38		195.00	198.00	3	3.04	101.33	2.46	80.92	
72.00	75.00	3	3.07	102.33	1.88	61.24		198.00	201.00	3	3.19	106.33	0.49	15.36	
75.00	78.00	3	3.07	102.33	2.41	78.5		201.00	204.00	3	3.18	106	1	31.45	
78.00	81.00	3	3	100	1.92	64		204.00	207.00	3	3.03	101	1.22	40.26	
81.00	84.00	3	2.98	99.33	1.95	65		207.00	210.00	3	3.42	114	0.44	12.87	
84.00	87.00	3	3.16	105.33	1.95	61.71		210.00	213.00	3	3.09	103	1.57	50.81	
87.00	90.00	3	2.88	96	0.85	28.33		213.00	216.00	3	2.97	99	1.78	59.33	
90.00	93.00	3	2.89	96.33	1.13	37.67		216.00	219.00	3	2.93	97.67	1.42	47.33	
93.00	96.00	3	2.99	99.67	1.97	65.67		219.00	222.00	3	3.08	102.67	1.96	63.64	
96.00	99.00	3	3.06	102	2.01	65.69		222.00	225.00	3	2.94	98	0.76	25.33	
99.00	102.00	3	2.64	88	0.71	23.67		225.00	228.00	3	2.92	97.33	1.4	46.67	
102.00	105.00	3	2.79	93	1.01	33.67		228.00	231.00	3	2.94	98	1.83	61	
105.00	108.00	3	2.95	98.33	1.53	51		231.00	234.00	3	2.88	96	1.82	60.67	
108.00	111.00	3	3.11	103.67	1.04	33.44		234.00	237.00	3	2.96	98.67	2.02	67.33	
111.00	114.00	3	2.89	96.33	2.26	75.33		237.00	240.00	3	3.04	101.33	2.68	88.16	
114.00	117.00	3	2.91	97	1.25	41.67		240.00	243.00	3	2.88	96	2.39	79.67	
117.00	120.00	3	3.02	100.67	2.26	74.83		243.00	246.00	3	2.96	98.67	2.02	67.33	
120.00	123.00	3	3.13	104.33	2	63.9		246.00	249.00	3	2.87	95.67	1.93	64.33	
123.00	126.00	3	2.99	99.67	2.12	70.67		249.00	252.00	3	2.98	99.33	1.64	54.67	
126.00	129.00	3	3.05	101.67	2.03	66.56		252.00	255.00	3	2.97	99	2.2	73.33	
129.00	132.00	3	2.69	89.67	0.33	11		255.00	258.00	3	2.98	99.33	2.35	78.33	
132.00	135.00	3	3	100	0.58	19.33									

From	To (m)	Int	Rec	Rec %	Rec >10cm	RQD	Comments	From	To (m)	Int	Rec	Rec %	Rec >10cm	RQD	Comments
258.00	261.00	3	2.88	96	1.46	48.67		384.00	387.00	3	2.96	98.67	1.94	64.67	
261.00	264.00	3	2.84	94.67	1.84	61.33		387.00	390.00	3	2.61	87	1.22	40.67	
264.00	267.00	3	3.05	101.67	2.73	89.51		390.00	393.00	3	2.88	96	1.5	50	
267.00	270.00	3	2.92	97.33	1.69	56.33		393.00	396.00	3	2.87	95.67	0.97	32.33	
270.00	273.00	3	2.98	99.33	1.43	47.67		396.00	399.00	3	2.85	95	1.81	60.33	
273.00	276.00	3	3	100	2.03	67.67		399.00	402.00	3	2.86	95.33	1.39	46.33	
276.00	279.00	3	3.14	104.67	2.38	75.8		402.00	405.00	3	2.88	96	1.51	50.33	
279.00	282.00	3	2.93	97.67	2.23	74.33		405.00	408.00	3	2.94	98	0.96	32	
282.00	285.00	3	2.83	94.33	2.22	74		408.00	411.00	3	2.85	95	0.58	19.33	
285.00	288.00	3	2.94	98	1.72	57.33		411.00	414.00	3	3.03	101	0.62	20.46	
288.00	291.00	3	3	100	1.75	58.33		414.00	417.00	3	2.75	91.67	0.23	7.67	
291.00	294.00	3	3	100	1.82	60.67		417.00	420.00	3	2.75	91.67	0.54	18	
294.00	297.00	3	3.02	100.67	1.65	54.64		420.00	423.00	3	2.27	75.67	0.32	10.67	ground down pieces
297.00	300.00	3	2.91	97	1.32	44		423.00	426.00	3	2.88	96	2.33	77.67	
300.00	303.00	3	2.74	91.33	1.61	53.67		426.00	429.00	3	3.8	126.67	2.68	70.53	
303.00	306.00	3	2.84	94.67	2.34	78		429.00	432.00	3	2.91	97	2.68	89.33	
306.00	309.00	3	3	100	1.93	64.33		432.00	435.00	3	3.05	101.67	2.79	91.48	
309.00	312.00	3	2.97	99	0.56	18.67		435.00	438.00	3	2.98	99.33	2.73	91	
312.00	315.00	3	3.11	103.67	2.07	66.56		438.00	441.00	3	2.94	98	2.52	84	
315.00	318.00	3	2.91	97	2.04	68		441.00	444.00	3	3.03	101	2	66.01	
318.00	321.00	3	2.81	93.67	1.2	40		444.00	447.00	3	2.95	98.33	2.15	71.67	
321.00	324.00	3	2.99	99.67	1.69	56.33		447.00	450.00	3	2.96	98.67	2.23	74.33	
324.00	327.00	3	2.71	90.33	0.68	22.67		450.00	453.00	3	2.96	98.67	2.11	70.33	
327.00	330.00	3	2.92	97.33	1.47	49		453.00	456.00	3	2.95	98.33	1.63	54.33	
330.00	333.00	3	2.58	86	0.84	28		456.00	459.00	3	2.96	98.67	1.82	60.67	
333.00	336.00	3	3.06	102	2.27	74.18		459.00	462.00	3	3.07	102.33	2.41	78.5	
336.00	339.00	3	2.95	98.33	1.45	48.33		462.00	465.00	3	3.02	100.67	2.65	87.75	
339.00	342.00	3	3.3	110	2.62	79.39		465.00	468.00	3	2.95	98.33	2.61	87	
342.00	345.00	3	2.79	93	1.23	41		468.00	471.00	3	2.91	97	2.08	69.33	
345.00	348.00	3	2.89	96.33	1.75	58.33		471.00	474.00	3	3.02	100.67	2.56	84.77	
348.00	351.00	3	3.06	102	1.1	35.95		474.00	477.00	3	2.98	99.33	2.26	75.33	
351.00	354.00	3	2.81	93.67	0.17	5.67		477.00	480.00	3	3.02	100.67	1.73	57.28	
354.00	357.00	3	2.65	88.33	0.59	19.67		480.00	483.00	3	2.92	97.33	2.28	76	
357.00	360.00	3	2.98	99.33	1.82	60.67		483.00	486.00	3	3.04	101.33	2.72	89.47	
360.00	363.00	3	2.86	95.33	1.15	38.33		486.00	489.00	3	3.01	100.33	2.56	85.05	
363.00	366.00	3	2.75	91.67	0.14	4.67		489.00	492.00	3	2.97	99	1.33	44.33	
366.00	369.00	3	2.97	99	2.04	68		492.00	495.00	3	2.8	93.33	1.86	62	
369.00	372.00	3	2.85	95	2.05	68.33		495.00	498.00	3	2.99	99.67	2.36	78.67	EOH
372.00	375.00	3	2.99	99.67	2.71	90.33									
375.00	378.00	3	3.12	104	2.09	66.99									
378.00	381.00	3	2.95	98.33	2.22	74									
381.00	384.00	3	3.07	102.33	2.04	66.45									

Drill Hole Log - Structure

BB11092

Distance	Rock	Structure	Mineralizati	Sence	Strike	Dip	Dip Dir	Trend	Plunge	DH Az	DH Dip	alpha	beta	gamma	Method	By	Date	Remarks
15.42		cont										40			TCA		1/1/2010	
43.75		fab										15			TCA		1/1/2010	
54.12		fab										25			TCA		1/1/2010	
60.15		fab										50			TCA		1/1/2010	
64.46		fab			173.26	66.77	263.26			31.70	-56.80	40	70		ICA		1/1/2010	
67.49		cont										60			TCA		1/1/2010	
68.76		fab			164.11	60.51	254.11			32.10	-56.80	50	65		ICA		1/1/2010	
72.61		fab										45			TCA		1/1/2010	
74.72		fab										45			TCA		1/1/2010	
80.95		fab			122.50	58.40	212.50			32.50	-56.60	65	0		ICA		1/1/2010	
95.35		fab			152.70	67.34	242.70			33.20	-56.30	50	45		ICA		1/1/2010	
98.42		fab										50			TCA		1/1/2010	
104.61		fab			133.71	73.07	223.71			33.70	-56.20	50	15		ICA		1/1/2010	
107.22		fab										50			TCA		1/1/2010	
113.47		fab			295.53	86.52	25.53			34.20	-56.10	30	350		ICA		1/1/2010	
119.76		fab			325.97	88.69	55.97			34.50	-56.10	30	25		ICA		1/1/2010	
122.69		fab			323.78	77.95	53.78			34.60	-56.10	20	20		ICA		1/1/2010	
125.77		fab			128.30	78.91	218.30			34.70	-56.00	45	5		ICA		1/1/2010	
137.70		fab			118.86	68.70	208.86			35.00	-56.00	55	350		ICA		1/1/2010	
143.92		fab			157.76	66.16	247.76			35.20	-56.00	50	50		ICA		1/1/2010	
158.10		vn										40			TCA		1/1/2010	epidote
161.77		fab			161.55	64.60	251.55			35.90	-56.00	50	55		ICA		1/1/2010	
200.80		fab			355.42	20.70	85.42			37.60	-56.00	40	200		ICA		1/1/2010	
205.30		fab										40			TCA		1/1/2010	
212.84		fab			128.00	79.00	218.00			38.00	-56.00	45	0		ICA		1/1/2010	
233.84		fab			128.70	74.10	218.70			38.70	-55.90	50	0		ICA		1/1/2010	
239.52		fab			146.95	77.01	236.95			39.10	-55.80	45	25		ICA		1/1/2010	
239.92		fab			129.10	74.20	219.10			39.10	-55.80	50	0		ICA		1/1/2010	
243.53		fab			135.87	73.87	225.87			39.20	-55.80	50	10		ICA		1/1/2010	
251.83		fab			335.15	89.63	65.15			39.50	-55.90	30	30		ICA		1/1/2010	
265.84		fab										30			TCA		1/1/2010	
300.11		cont										30			TCA		1/1/2010	
302.26		cont										50			TCA		1/1/2010	
313.61		cont			144.53	51.96	234.53			42.00	-56.20	70	30		ICA		1/1/2010	
314.81		cont			139.79	83.42	229.79			42.10	-56.20	40	10		ICA		1/1/2010	
314.89		cont			152.39	86.35	242.39			42.10	-56.20	35	25		ICA		1/1/2010	
315.14		cont			173.94	83.92	263.94			42.10	-56.20	30	50		ICA		1/1/2010	
317.36		cont			36.02	42.43	126.02			42.10	-56.20	35	235		ICA		1/1/2010	
318.69		fab			138.88	73.47	228.88			42.20	-56.20	50	10		ICA		1/1/2010	
319.16		cont										20			TCA		1/1/2010	
319.94		cont										25			TCA		1/1/2010	
326.73		fab			95.24	32.14	185.24			42.40	-56.30	70	250		ICA		1/1/2010	
341.63		fab			154.70	59.47	244.70			42.80	-56.30	60	40		ICA		1/1/2010	
347.59		fab			133.10	33.70	223.10			43.10	-56.30	90	0		ICA		1/1/2010	
376.73		fab										30			TCA		1/1/2010	
386.82		fab			323.46	86.52	53.46			44.80	-56.10	30	10		ICA		1/1/2010	
388.14		cont										45			TCA		1/1/2010	
391.34		fab										55			TCA		1/1/2010	

Drill Hole Log - Structure

BB11092

Distance	Rock	Structure	Mineralizati	Sence	Strike	Dip	Dip Dir	Trend	Plunge	DH Az	DH Dip	alpha	beta	gamma	Method	By	Date	Remarks
397.72		fab										50			TCA		1/1/2010	
400.93		fab										50			TCA		1/1/2010	
426.10		fab			80.41	50.51	170.41			46.80	-56.10	50	270		ICA		1/1/2010	
431.74		fab			148.28	62.82	238.28			47.20	-56.10	60	20		ICA		1/1/2010	
436.09		cont			199.02	60.34	289.02			47.60	-55.90	40	85		ICA		1/1/2010	
439.71		cont			137.70	74.10	227.70			47.70	-55.90	50	0		ICA		1/1/2010	
441.87		cont			124.37	40.02	214.37			47.90	-55.80	80	300		ICA		1/1/2010	
449.67		fab			308.72	76.17	38.72			48.40	-55.70	20	350		ICA		1/1/2010	
455.94		fab			115.89	81.23	205.89			48.70	-55.40	40	330		ICA		1/1/2010	
461.87		fab			139.00	79.80	229.00			49.00	-55.20	45	0		ICA		1/1/2010	
470.56		fab			151.74	88.98	241.74			49.50	-55.10	35	15		ICA		1/1/2010	
476.89		fab			133.15	74.66	223.15			49.80	-55.00	50	350		ICA		1/1/2010	
482.90		fab			140.10	65.20	230.10			50.10	-54.80	60	0		ICA		1/1/2010	
488.69		fab			320.30	89.49	50.30			50.30	-54.50	35	0		ICA		1/1/2010	
497.78		fab			172.25	84.19	262.25			50.30	-54.40	35	40		ICA		1/1/2010	

From	To (m)	Style 1	Style 2	% py	% cp	% gn	% sp	% tt	n vg	% Ba	% po	% bn	% mag	Remarks
298.61	300.11	tr		0.5										
300.11	301.61	tr		1										
301.61	302.26	tr		1										
302.26	303.05	str		1										
303.05	303.81	tr		1										
303.81	305.31	tr		2										
305.31	306.81	tr		0.5										
306.81	308.31	bl		3										
308.31	309.81	tr		1										
309.81	310.81	tr		1	0.5									
310.81	311.75	str		1										
311.75	313.00	ws	str	8	0.5		8							
313.00	313.61	ws	tr	10			2							
313.61	314.89	ws		3										
314.89	315.89	tr		1										
315.89	316.80	tr		1										
316.80	317.36	ws		4										
317.36	318.28	vn		3										
318.28	319.16	ws		4										
319.16	319.94	str		3										
319.94	321.44	ws		3										
321.44	322.94	ws		4										
322.94	324.44	ws		5										
324.44	325.94	ws	tr	4	0.5									
325.94	327.44	ws		4										
327.44	328.94	ws		4										
328.94	330.44	ws		6										
330.44	331.94	ws		5										
331.94	333.28	ws		5	1									
333.28	334.78	tr		0.5										
386.64	388.14	none		0										
388.14	389.64	tr		0.5										
389.64	391.14	dis	ws	2										
391.14	392.64	dis	ws	2										
392.64	394.14	dis	ws	2										
394.14	395.64	dis	ws	4										
395.64	397.14	dis	ws	5										
397.14	398.64	dis	ws	4										
398.64	400.14	dis	ws	5										
400.14	401.64	dis	ws	4										
401.64	403.14	dis	ws	4										
403.14	404.64	dis	ws	3										
404.64	406.14	dis	ws	3										
406.14	407.64	dis	ws	3										
407.64	408.85	dis	ws	3										
408.85	410.35	dis		2										

From	To (m)	Style 1	Style 2	Sil	Ser	% Py	Chl	Epi	Alb	Carb	Hem	Mar	Bio	Other Type 1	Oth1	Other Type 2	Oth2	Remarks
311.75	313.61	per		7.5	3	8												
313.61	314.89	per		6	1	1	5											
314.89	315.14	per		7.5	3	4												
315.14	316.80	per		6	1	1	5											
316.80	317.36	per		7.5	3	4												
317.36	318.28	vn					3											
318.28	319.16	per		7.5	3	4												
319.16	319.94	vn				1	3											
319.94	333.28	per		7.5	4.5	5												
333.28	361.40	per		7			2	2										
361.40	366.43	per					1											
366.43	388.14	per		7			2	2										
388.14	408.85	per		8	2	3												
408.85	423.93	per		1			5	2										

**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX IV

ANALYTICAL PROCEDURES

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

Rock ¼ drill core samples are shipped to Bureau Veritas Commodities Canada Ltd, Vancouver Mineral Laboratories. Where the individual core samples weighting between 0.18-0.64kg are prepared by crushing the entire sample to 70% passing -2mm, and splitting off 250g and pulverizing the split to better than 85% passing 75 microns (method: PRP79-250). An Extra Wash with Silica between each sample is preformed between samples during pulverization (Method PULSW).

All samples are analyzed for Total Whole Rock Characterization (method LF202): with major element oxides, and trace elements by ICP-AES , ICP-MS; and Leco C% and S%.

**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX IV

**COMPUTER SOFTWARE
& MASS CHANGE CALCULATIONS**

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

A list of the computer software used in the execution and reporting of the 2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling.

Gems 6.6 - Gemcom Software International

General mining package software with Microsoft Access database for storage of drillhole data.

Mapinfo v.11 & Discover 2011 – Pitney Bowes

Geographic information system (GIS) software used for surface mapping data and analysis.

Microsoft Excel 2010 Spreadsheet Mass Change Calculations

1. LOI Free Basis: All values are normalized(100%) to the anhydrous Sum total without LOI, C% and S%
2. Initial Zr is calculated from the Zr/ Al₂O₃ ratio : using the straight line relationship:
 $23.3333/(0.0657+(Zr/ Al_2O_3)).$
3. Initial Al₂O₃ calculated from Zr/ Al₂O₃ * Zr LOI free .
4. Al correction factor calculated from initial Al₂O₃/LOI free Al₂O₃
5. Re-constituted values are calculated from an Al correction factor * LOI Free SiO₂... to ...Ba.
6. Initial Zr/Al₂O₃ ratio is calculated.
7. Initial Zr is calculated from the Zr/ Al₂O₃ ratio : using the straight line relationship:
 $23.3333/(0.0657+(Zr/Al)).$
8. Magmatic fractionation curves calculated by Tim Barrett are applied to the initial Zr to calculate the pre-cursor composition.

Table: Fractionation Curve Formulas

SiO ₂ %	TiO ₂ %
$y = 45.5011883112\text{LOG}(Zr) - 25.4010310941$	$y = 0.0000011497x^3 - 0.0003814988Zr^2 + 0.0321064187Zr + 0.0951036841$
Al ₂ O ₃ %	FeO%
$y = -0.0657Zr + 23.333$	$y = 17.6018472338e^{-0.0132794249Zr}$
MnO%	MgO%
$y = 0.3572743098e^{-0.0138421616Zr}$	$y = 18.3219260325e^{-0.0199581824Zr}$
CaO%	Na ₂ O%
$y = 17.0981895075e^{-0.0138975096Zr}$	$y = 0.0192568847Zr + 1.1271753980$
K ₂ O%	P ₂ O ₅ %
$y = 0.0232478698Zr - 0.5209184357$	$y = 0.3514521817e^{-0.0113463126Zr}$
Cr ₂ O ₃ %	Ba ppm
$67.7316 * Zr^{-2.2022}$	$y = -0.0000558239 * Zr^3 + 0.0139951288 * Zr^2 + 4.4741534562 * Zr + 46.4903956145$
Chlorite-Carbonate-Pyrite Alteration Index CCPI = $\frac{100(FeO + MgO)}{FeO + MgO + Na_2O + K_2O}$	Ishikawa Alteration Index AI = $\frac{100(MgO + K_2O)}{MgO + K_2O + CaO + Na_2O}$

9. The Precursor values are re-normalized.
10. The precursor normalized values are subtracted from the LOI free basis normalized to give the absolute mass change.

**2015 Tulsequah Project:
BB11092 Lithogeochemical Re-Sampling**

APPENDIX V

STATEMENT OF EXPENDITURES

**Tulsequah River Area
Northwestern BC
NTS 104K/12**

Atlin Mining Division

Latitude 58°44'N, Longitude 133°35'W

Owner & Operator:

**Chieftain Metals Inc.
2 Bloor Street West, Suite 2510
Toronto, Ontario**

The cost statement lists the eligible exploration expenses incurred during Chieftain Metals 2015 Tulsequah Project: for the Lithogeochemical re-sampling of 10 samples from drillhole BB11092 located exclusively on Mineral Claim 513820(100%).

Exploration Work type		Comment	Days		Totals	
Personnel (Name) / Company	Position	Field Days (list actual days)	Days	Rate	Subtotal	
Camp Manager	Camp Manager	15/10/15 - 16/15/15	2	\$532.48	\$1,064.96	
					\$1,064.96	\$1,064.96
Office Studies		List Personnel (note - Office only, do not include field days)				
Exploration Manager	Planning		1.0	\$517.51	\$517.51	
Exploration Manager	Interpretation		2.0	\$517.51	\$1,035.02	
Exploration Manager	Report preparation		1.0	\$517.51	\$517.51	
					\$2,070.04	\$2,070.04
Geochemical Surveying		Number of Samples	No.	Rate	Subtotal	
Whole Rock Assays			10.0	\$74.35	\$743.45	
					\$743.45	\$743.45
Drilling		No. of Holes, Size of Core and Metres	No.	Rate	Subtotal	
					\$0.00	\$0.00
Transportation			No.	Rate	Subtotal	
Fixed Wing		Atlin Air			\$1,540.00	
					\$1,540.00	\$1,540.00
Accommodation & Food			Rates per day	Rate		
Camp Costs				\$60.00	\$120.00	
					\$120.00	\$120.00
Miscellaneous						
		Communication / Office Supplies / Field Supplies		\$136.66	\$273.32	
					\$273.32	\$273.32
Freight, rock samples				Rate		
Shipping					\$45.76	

	\$45.76	\$45.76
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TOTAL Claim Maintenance Expenditures - Claim 513820

\$5,857.53

Brett Armstrong - Exploration Manager - 4-Dec-2015

Work Conducted 2015/oct/15 - 2015/oct/16; Mines Act Permit MX-1-355; Approval 13-1650242-0822

Event Number: 5580728; 2015/dec/04