BRITISH	BC Geological Surv	ey atten couve
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Ministry of Energy, Mines & Petroleum Resources Mining & Minerals Division BC Geological Survey	As Ti	sessment Report tle Page and Summary
TYPE OF REPORT [type of survey(s)]: Geochemical / Geological	TOTAL COST: \$2	1,569.20
AUTHOR(S): Roger MacDonald	SIGNATURE(S):	
NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-4-660	Y	EAR OF WORK: 2019
STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): SO	W #5751620 March 23, 2019 to August	16, 2019
PROPERTY NAME: Bluff		
CLAIM NAME(S) (on which the work was done): BLUFF, SOUTH BUTLEF	R, BUTTS2, BLAKE S, BLAKE EXT	
MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:	5	
MINING DIVISION: Clinton	NTS/BCGS: BCGS 092 N77	
LATITUDE: <u>51</u> ° <u>43</u> <u>20</u> "LONGITUDE: <u>124</u>	<sup>o</sup> <u>37</u> '20 " (at centre of work)	
OWNER(S):         1) Susan Elizabeth Rolston       2)		
MAILING ADDRESS: P.O. Box 4116, Williams Lake, BC, Canada, V2G 2V2		
OPERATOR(S) [who paid for the work]:         1) Susan Elizabeth Rolston		
MAILING ADDRESS: P.O. Box 4116, Williams Lake, BC, Canada, V2G 2V2	8	
PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alto Cretaceous volcanics, andesite, basalt, rhyolite flows intruded by qu	eration, mineralization, size and attitude): uartz feldspar porphyry, diorite and felds	par porhyry.
mineralization 1 - Cu/Au porphyry and qz/carb veins, fracture control	olled veins 3km x 2.5km. 2 - qz, Pb, Zn, /	Ag veins 1km x 1km
3 - Au, Aspy in clay altered and silicified shear 200m x 400m, Major	r structures NNW x SSE and E x W	
REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPO	DRT NUMBERS: 12422 13780 17080 180	

20860B, 21967, 28547, 29526

1

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 20 ha		1013712,1019192,1034920,1069906	3,700.00
Photo interpretation			
GEOPHYSICAL (line-kilometres)	_		
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for)			
Soil			
Silt			
Rock 21 rocks analysed for 5	51 elements	1013712,1019192,1034920,1069906,	\$17,869.20
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)		×	
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/t	rail,		
Trench (metres)			
Underground dev. (metres)			
Other	1 9 1 9		
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# **TCHAIKAZAN RESOURCES INC.**

Box 32, Tatla Lake, British Columbia, Canada VOL 1V0 Ph: 250 476 1218

# BLUFF PROPERTY Bluff, South Butler, Butts2, Blake S and Blakeext Claims

Clinton Mining Division BCGS 092 N 77

Lat 51° 43' 20" N Long 124° 37' 20" W

# **ASSESSMENT REPORT**

# on the

# GEOLOGICAL and ROCK GEOCHEMICAL PROGRAM

March 23, 2019 to August 17, 2019

By

Roger MacDonald, P.Geo. 8191 River Road Richmond, BC, Canada V6X 1CX8

August 16, 2019

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#### 1.0 Summary

The Bluff Property of Tchikazan Resources Inc. is situated about 22 km south of the village of Tatla Lake BC which is on British Columbia Highway 20 about 240 km west of Williams Lake BC. The property is located on BCGS map 092N 077 and consists of Tenures 1012223, 1012228, 541943, 1013712, 547801, 1017460, 848082, 848734, 1019192, 984009, 983993, 1019282, 1019280, 1034569, 1034920, 1030568 and 1034921 owned 100% by Susan Elizabeth Rolston. The property is centered approximately on Latitude 51° 45' 25" N Longitude 124° 41' 04" W.

The Bluff claim block has an exploration history dating back to the 1940's when precious metal veins were discovered on Butler Mountain. The ground was worked for its copper/moly/gold potential by several operators from the 1960's through to the present.

The Bluff Property was staked as a result of prospecting activity by the local landowner during the course of an earlier exploration program by Newmac Resources Inc. on the adjacent property. Sue and Les Rolston own a small local ranch and have provided room, board and logistical assistance to Newmac Resources during the course of previous exploration programs. Mrs. Rolston developed a keen interest in prospecting and had located a single specimen exhibiting malachite and tourmaline mineralization. With encouragement from a Mincord Exploration Consultant she continued her exploration and delineated a broad tourmaline/chalcopyrite zone with occasional spectacular copper carbonate coated cliff faces. When the extent and limits of the mineralization became clearer, claims were staked and a property agreement was struck between Susan Rolston and Newmac.

Late in 2006, a geophysical survey (mag. and IP), was completed by Alan Scott Geophysics on the newly staked Bluff claims. Based on the results of this survey, a diamond drilling program was executed, in two phases, between February 14, 2007 and May 23, 2007. The results of that drilling program were inconclusive. However un-split core still racked on site displays varying degrees of copper mineralization.

Subsequent to the 2007 drill program, surrounding Newmac claims were inadvertently allowed to lapse. As claims became available, Sue Rolston acquired them to reconstitute the land holdings package. Work comprised prospecting and geochemical rock sampling over the core Bluff claims and the newly acquired claims.

In 2012, Susan Rolston formed Tchaikazan Resources Ltd. to manage the expanding land holdings. Work since that time, has been undertaken on behalf of the company. The 2012 geochemical program consisted of rock sampling on three areas of the Bluff claim block. Notable samples were taken below the Bluff Lake road in the area of Painted Bluff showing. Samples Blu1, Blu2 and Blu3 returned copper values of 3190ppm, 2330ppm and 6250ppm respectively. Sample Blu1 also ran 2.02g/t Au, 2260ppm As and 889ppm Zn. Eight of twelve samples located in the area of the Bornite showing were anomalous in copper. The 2013 work program comprised geochemical sampling of 22 rocks , 86 drill core intervals and six soils from various locations on the Bluff claims and the newly acquired land package. Assays returned from BL 08-07indicate two broad zones of anomalous copper values: 21.95m @ 221.0ppm Cu from 136.2m to 158.1m and 40.2m @ 146.5ppm Cu from 170.2m to 210.4m. Sample Cow2-107, float located directly beneath a gossanous outcrop on the western bank of , returned assays of 2.01gpt Au, 1070gpt Ag, 5.02% Pb and 5.25% Zn, may indicate the westerly extension of the Cow Vein system. In addition, 7.0 kilometres of trail was GPS surveyed for the purpose of determining the condition of the trails and extent of access they would provide to the north and eastern claims.

The 2014 work program comprised geochemical sampling of 27 rocks and five C-horizon soils from the Butler Lake area, Bornite Zone and Noranda Pits. In addition, 7.0 kilometres of trail was cleared to accommodate ATV access to the north and eastern portions of the claims. In early spring, a compilation of all available historic data was performed. Continued prospecting and geochemical rock sampling is recommended west of Butler Lake and the east fork of Butler Creek upstream of the confluence of East and West Butler Creeks. One diamond drill hole is recommended to test the coincident copper and I.P. anomalies in the area of the Noranda Pits.

The August 2015 work program included prospecting in the West Butler Creek area just upstream from the confluence of East and West Butler Creeks. In addition, a review of mineralized structures in the "Pretty Pile" area, the Painted Bluffs and the Slide area was undertaken to more accurately locate and orient the local copper/gold and molybdenum mineralization. The Pie Grid was established with the cutting of 8.3 kilometres of gridline and trail in preparation for I.P. and Mag surveys that later defined a moderate chargeability/resistivity anomaly. The newly acquired Math claim was prospected and two rock samples were sent for assay. Two rock sample locations in the vicinity of West Butler Creek were resurveyed using GPS for the purpose of incorporating into the Tchaikazan assessment report titled "Assessment Report on the Rock Geochemistry and Geological Program" (MacDonald, R.C., 2015).

The 2016 geochemical program produced a coincident Cu/As/Sb geochemical anomaly over the geophysical anomaly defined in the 2015 program. Mapping along the Hayfield bluff indicate a possible mineralized system in the vicinity of the Painted Bluff copper showing and diamond drill hole BL07-08.

Due to wide spread forest fires in Cariboo- Chilcotin area during the 2017 field season, only two days of geochemical rock sampling were carried out. An extension to the 2017 assessment reporting period was granted and the bulk of the geochemical surveys were performed in July and August 2018. The program comprised 14 rock samples and 234 soil samples.

The soil geochemical program identified two moderate Cu@+100ppm/As/Sb anomalies. One over 100 metres on Line 93+00N from 110+50E to 111+25E and a two station anomaly on the south-west end of the talus traverse TT18002 and TT18003. A weaker Cu/As/Sb anomaly is located at the west end of line 95+00N between 94+25E and 95+25E. No further exploration is recommended in the south-eastern portion of the claims. The source of the granodiorite boulders should be determined specifically upslope to the east to the east of the boulders and south of the copper anomaly defined on line 93N. Continued geochemical sampling and mapping is recommended to the south-east of Butler Lake in the vicinity of the Cu/As/Sb anomaly at the west end of line 95N.

This year's program comprised rock geochemical and geological mapping on the BLUFF, SOUTH BUTLER, BUTTS2, BLAKE S and BLAKEEXT claims. A total of 25 rocks were sampled of which 21 were sent for assay. Geologic mapping was carried out on 18 locations as the samples were collected. The program was successful in extending a copper rich tourmaline breccia from its discovery outcrop to 500 metres to the north-west along a 330° to 340° trend along the Hayfield Bluffs. Sampling in the area of the Painted Bluff extended that mineralized zone some 150 to the south-east along a 135° trend. Also, 550 metres to the east of the painted Bluff, the Slide zone sampling returned a 1360ppm Cu/22.9ppm Pb/1.15ppb Ag assay from outcrop that previously returned anomalous molybdenum tenors.

On the recently staked BLAKEEXT claim rock sample 36 returned assays of 1860ppm Cu and 2.44ppm Ag indicating similar mineralization to the math showing located 1300 metres to the north north-east. Sampling along a gossanous ridge in the St. Teresa area, located approximately 550 metres west of Butler Lake returned two samples anomalous in copper; RM19005 @ 461ppm Cu and RM19007 @ 433ppm Cu.

The Bluff Property holds potential for mineralization similar to the Fish Lake (Prosperity) Cu/Au deposit located some 70km to the East; The Skinner Mountain lode Ag/Au veins, 18km east and the Blackhorn Mountain lode Au/Ag veins 20km to the south.

#### 2.0 Location and Access

The property is located on BCGS mapsheet 092 N 077 and centered on Lat 51° 45' 54" N Long 124° 39' 36" W. The Bluff property is situated in the Clinton Mining Division approximately 250 km west of Williams Lake BC. There is good all weather paved road access from Williams Lake west on Highway 20 to Tatla Lake. About one kilometre before reaching the village of Tatla Lake, is the Bluff Lake turnoff. Travel south on good all weather gravel road about four kilometres to the Bluff Lake road (exit west) and follow for 19.6 km to the Rolston Ranch access road. Beyond the Ranch, access is difficult and gained only by ATV, foot or helicopter. Local helicopter service is provided by White Saddle Air Services at the south end of Bluff Lake.



# 3.0 Claims

Claim Name	Title Number	Units	Area/ha	Issue Date	Good To Date
BLUFF	541943	37	740.39	2006/sep/25	2024/apr/24
HORNE	547801	10	200.02	2006/dec/21	2024/mar/20
BLUFF11	848082	8	160.10	2011/mar/04	2020/apr/30
BLUFF 112	848734	3	60.04	2011/mar/12	2020/apr/30
BORNITE	983993	12	240.10	2012/may/05	2020/apr/30
EXT	984009	5	100.02	2012/may/05	2020/apr/30
BUTT2	1012223	9	180.13	2012/aug/24	2020/apr/30
BUTT 1	1012228	13	260.16	2012/aug/24	2020/apr/30
SOUTH BUTLER	1013712	17	340.32	2012/oct/13	2020/apr/30
BLAKE	1017460	6	120.14	2013/mar/03	2020/apr/30
BUTTS2	1019192	12	240.21	2013/may/03	2020/apr/30
COW2	1019280	9	180.13	2013/may/06	2020/apr/30
COW 1	1019282	13	260.11	2013/may/06	2020/apr/30
BLAKE2	1030586	5	100.11	2014/aug/27	2020/apr/30
NEWMAC	1034569	2	40.04	2015/mar/04	2020/apr/30
BLAKE S	1034920	6	120.15	2015/mar/23	2020/apr/30
MATHEX	1034921	4	80.08	2015/mar/23	2020/apr/30
BLAKEEXT	1069906	2	40.05	2019/jul/27	2020/aug/20

The Bluff Property comprises eighteen claims totalling 173 units, covering 3,462.31 hectares. The claims are owned 100% by Susan Elizabeth Rolston.

Table 1 - Claim Status



#### 4.0 Physiography and Local Infrastructure

In the vicinity of the property, approaching Bluff Lake, the mountains of the coast range rise dramatically from the generally rolling terrain of the western Chilcotin Plateau. The small relatively shallow ponds and lakes or long sinuous lakes occupying old river beds and valleys of the plateau give way to larger, deeper lakes within ice scoured valleys within a relatively short distance south, from Bluff Lake the highest peaks (in excess of 4000 m) in the coast range are found, with attendant ice fields, numerous valley Glaciers, and related terrain.

The property receives on average, less than one metre of snow annually and is generally snow free from mid-April to mid to late November. With exceptions of the more precipitous and extreme elevations, the property can be worked in all seasons.

The property is extensively covered with glacial overburden consisting of basal and ablation tills and glacio-fluvial deposits, except where slopes are steeper, this includes almost all of the more easily accessible portions of the property. The overburden varies in thickness and reaches more than 100m thick. Outcropping bedrock is nonexistent on the lower and gentler slopes.

Vegetation in the area consists of mainly coniferous forest with local patches of deciduous poplar or aspen. Locally, but not in the work area, there has been clear cut logging and corresponding new roads since the 1980's with earlier re-grown cut blocks evident. In recent decades there has been an endemic infestation of the mountain pine beetle that has affected a vast area of central BC including the Bluff Property.

The settlement of Tatla Lake is on highway 20 near the height of land between Tatla Lake of the Fraser-Chilcotin drainage basin and the coastal drainage of the Mosley Creek-Homathko River and Klinaklini River systems, which drains into Bute Inlet.

Tatla Lake offers basic services: fuel, lodging, meals, a general store and post office. There is also a local health nurse and first aid station. Most supplies must come from Williams Lake, about 220 Km to the east. Freight and transportation services along Highway 20 are very good with generally next day delivery of goods from Williams Lake possible.

#### **5.0 History and Previous Work**

Previous to the 1960's and possibly into the 1940's precious metal veins were discovered on "Butler Mountain". The knowledge that there was precious metal potential on Buffer Mountain is supported by the fact that the Butlers, owners of the cattle ranch on the lower reaches of Butler Creek, had panned small amounts of gold and recovered at least one "pea sized" nugget from Butter Creek. The Butlers seasonally grazed cattle in the alpine meadows and herded their cattle to higher open range on a cow and horse trail that crossed clay altered and gossanous exposures below the Macdonald (Cow trail) veins.

Sometime in the 1960's American Air Force personnel based at Puntzi Lake, became knowledgeable about the precious metal veins on the flank of Butler Mountain and placed claim posts following American federal staking laws. It is doubtful whether these claims were actually recorded in British Columbia.

In 1966, Puntzi Lake Resident, A. McDonald staked the St.Teresa Claims to cover the veins. Sometime after 1966 and for the better part of fifteen years, MacDonald laboured with a small bulldozer to build a pickup truck road to the veins. MacDonald reached the veins about 1982, and died shortly thereafter. The Title to the St.Teresa claim was transferred to his nephew Don Rose.

During the early 1970's, Noranda Exploration Company Limited staked claims in the Butler Lake area after regional sampling indicated anomalous values for copper, moly and gold. Noranda completed geological, geophysical (IP) and geochemical (soil) programs.

In 1983, J.W. Morton travelled up the MacDonald road to investigate a set of quartz veins exposed in three hand trenches. Imperial Metals subsequently optioned the claims from Don Rose and staked additional claims. Soil grid sampling and bulldozer trenching in 1984 yielded assays up to 2.6-oz/ton gold and 20.5 oz/ton silver from trench rubble. Imperial Metals drilled two holes from 1 set up on the vein structure before cold weather ended the program.

In 1984, Ryan Exploration, a subsidiary of US Borax located a significant metal anomaly on the main channel of Butler Creek and staked the area of Butler Lake and the early Noranda discoveries. The claims lapsed in 1987.

In 1987 Canavex Resources Limited purchased the St Teresa claim from Don Rose and staked the Newmac (an acronym for New MacDonald) claims around them. The property was optioned to Jaqueline Gold Corp. that same year. Subsequent work revealed porphyry style mineralization and alteration in Butler Creek bed.

In 1988 Jaqueline Gold expanded their grid and completed an IP survey preparatory to drilling two diamond drill holes later that year. The second drill hole intersected 157m grading 0.18% copper including 17m grading 0.13%Copper and 340 ppb gold. Jaqueline subsequently returned the property to Canavex.

In 1989, Canavex optioned the property to Noranda (their second involvement with the property). They competed 30km of IP survey, 37 km of ground Mag Survey, analysed 1203 soil samples, 158 rock samples, and completed 435 line miles of helicopter airborne geophysical survey. In 1991 Noranda completed 1939 m of diamond drilling in seven holes before returning the property.

In 1998, the Newmac Property was optioned to Ascot Resources Ltd. Ascot completed an additional 4 holes (875m.) The Ascot program while failing to identify economic mineralization, did establish that the porphyry system was potentially a very large deposit.

In 2004, Newmac Resources Inc. acquired the claims from Canavex and conducted 17.8km of IP and mag surveys along the Macdonald road ("C" grid) where altered and pyritic rocks had been noted. In 2006, Newmac completed a total of 6 widely spaced drill holes for a total of 1130.4 m. The widely spaced drilling failed to refine or direct the exploration beyond the knowledge base already at hand.

During 2004 to 2005, while Mincord Exploration Consultants crews were staying with the Rolstons, Mrs. Rolston had shown them rocks and samples she had collected from nearby outcrops on and adjacent to their ranch. She was encouraged to do more prospecting and sampling, which eventually resulted in the staking of the Bluff claims. The Bluff Claims contained widespread tourmalinized, fractured and brecciated volcanic rocks with occasional chalky (intrusive?) clasts and common to locally abundant chalcopyrite, pyrite & bornite. The rocks were primarily located near the base of Butler Mtn. East of Bluff Lake. The obvious potential of the Bluff claims became increasingly apparent as Mrs. Rolston did more sampling.

An option agreement for the claims was concluded and late in 2006, geophysical surveys totalling 28.2 km of IP & mag were completed by Alan Scot, Geophysicist. The geophysical program delineated several targets to be followed up by diamond drilling. In early 2007, a diamond drilling program was initiated which completed 2389.4 m of NQ coring. Results of that program were inconclusive. Drill core was not systematically sampled and that core which was assayed did not return any significant results. However, un-split core stored on site at the Rolston Ranch shows varying degrees of copper mineralization.

Subsequent to the 2007 drill program, surrounding Newmac claims were inadvertently allowed to lapse. As claims became available, Susan Rolston acquired them to reconstitute the land holdings package. Work comprised prospecting and geochemical rock sampling over the core Bluff claims and the newly acquired claims.

In 2012, Susan Rolston formed Tchaikazan Resources Inc. to manage the expanding land holdings. Work since that time, has been undertaken on behalf of the company. The 2012 geochemical program consisted of rock sampling on three areas of the Bluff claim block. Notable samples were taken below the Bluff Lake road in the area of Painted Bluff showing. Samples Blu1, Blu2 and Blu3 returned copper values of 3190ppm, 2330ppm and 6250ppm respectively. Sample Blu1 also ran 2.02g/t Au, 2260ppm As and 889ppm Zn. Eight of twelve samples located in the area of the Bornite showing were anomalous in copper.

The 2013 work program comprised geochemical sampling of 22 rocks , 86 drill core intervals and six soils from various locations on the Bluff claims and the newly acquired land package. Assays returned from BL 08-07indicate two broad zones of anomalous copper values: 21.95m @ 221.0ppm Cu from 136.2m to 158.1m and 40.2m @ 146.5ppm Cu from 170.2m to 210.4m. Sample Cow2-107, float located directly beneath a gossanous outcrop on the western bank of , returned assays of 2.01gpt Au, 1070gpt Ag, 5.02% Pb and 5.25% Zn, may indicate the westerly extension of the Cow Vein system. In addition, 7.0 kilometres of trail was GPS surveyed for the purpose of determining the condition of the trails and extent of access they would provide to the north and eastern claims.

The 2014 work program comprised geochemical sampling of 27 rocks and five C-horizon soils from the Butler Lake area, Bornite Zone and Noranda Pits. In addition, 7.0 kilometres of trail was cleared to accommodate ATV access to the north and eastern portions of the claims. In early spring, a compilation of all available historic data was performed. The compilation was done to facilitate spatial analysis of all geochemical and geophysical data and three dimensional modelling on mineralized drill holes. Continued prospecting and geochemical rock sampling is recommended west of Butler Lake and the east fork of Butler Creek upstream of the confluence of East and West Butler Creeks. One diamond drill hole is recommended to test the coincident copper and I.P. anomalies in the area of the Noranda Pits.

The August 2015 work program included prospecting in the West Butler Creek area just upstream from the confluence of East and West Butler Creeks. Fifteen samples, six grabs and nine chips, were collected for assay from gossanous outcrops exposed along the deeply incised cliff faces bounding West Butler Creek. In addition, a review of mineralized structures in the "Pretty Pile" area, the Painted Bluffs and the Slide area was undertaken to more accurately locate and orient the local copper/gold and molybdenum mineralization. In October 8.3 kilometres of gridline and trail were cut in preparation for I.P. and Mag surveys. The newly acquired Math claim was prospected and two rock samples were sent for assay. Two rock sample locations in the vicinity of West Butler Creek were resurveyed using GPS for the purpose of incorporating into the Tchaikazan assessment report titled "Assessment Report on the Rock Geochemistry and Geological Program" (MacDonald, R.C., 2015).

The 2016 geochemical program produced a coincident Cu/As/Sb geochemical anomaly over the geophysical anomaly defined in the 2015 program. Mapping along the Hayfield bluff indicate a possible mineralized system in the vicinity of the Painted Bluff copper showing and diamond drill hole BL07-08.

Due to wide spread forest fires in Cariboo- Chilcotin area during the 2017 field season, only two days of geochemical rock sampling were carried out. An extension to the 2017 assessment reporting period was granted and the bulk of the geochemical surveys were performed in July and August of 2018. Six rock samples were taken in 2017 and 8 samples were taken in 2018. Two hundred and thirty four soil samples were taken over 8 days in July and August of the 2018 field season.

The soil geochemical program identified two moderate Cu@+100ppm/As/Sb anomalies. One over 100 metres on Line 93+00N from 110+50E to 111+25E and a two station anomaly on the south-west end of the talus traverse TT18002 and TT18003. A weaker Cu/As/Sb anomaly is located at the west end of line 95+00N between 94+25E and 95+25E. These anomalies may indicate a mineralized porphyry system at depth.

The rock geochemical program returned a number of samples of interest. Sample BLAKE18007 returned values of Cu/2,630ppm, Ag/3.32ppm and Zn/259. This a float sample and does not appear to correlate to soil values in the vicinity. The boulders of granodiorite float, in particular BLAKE18009 and BLAKE18012 returned anomalous values in copper, 170 ppm and

143ppm respectively. Though only anomalous, the granodiorites are intensely clay altered and may represent a center of mineralization.

## 6.0 Geology

## 6.1 Regional Setting

The Bluff claims are located along the southwestern margin of the "Tyaughton Trough", a late Jurassic depositional basin that, in this area, is predominantly filled with Lower Cretaceous volcanic and sedimentary rocks. The Tyaughton Trough in the vicinity of the Bluff Claims is a structural block bounded by two significant breaks:

- The Yalakom Fault is a right lateral transcurrent fault striking west northwest with 130 to 190 km of offset and forms the north bounding structure of the basin.
- The Tchaikazan Fault is also a right lateral, west-northwest trending transcurrent fault, with an estimated offset of 32 km and forms the southern bounding structure.

The Tyaughton Basin collectively represents a defining feature of the Cordillera, which separates the Coast Mountains and Coast Plutonic Complex to the southwest from the Chilcotin Plateau in the Intermontane Belt to the northeast. A third and essentially parallel fault, The Niut Fault, runs through Butler Mountain.

## 6.2 Local Geology

Rock outcropping around the Bluff Property is restricted to the bluffs overlooking Bluff Lake, the slopes of Butter Mountain and to the north, beyond Butler Creek, the upland sides of the valley. The ridge on the western side of the claims overlooking Bluff Lake and backing onto the Rolston Ranch is composed of medium to dark green chloritic andesite , moderately hard, with traces of pyrite, and minor epidote alteration.

As the ridge ascends towards Butler Mountain a hard, medium grey-green andesite with pale, diffuse white feldspar phenocrysts becomes common. This rock has been described elsewhere as "Hornfels". North of Butter Creek, on the valley flanks dark green chloritic andesite is common. It may have quartz and carbonate veining with minor epidote. Higher on the slopes north of Butler Creek and east of Horne Lake, outcropping of the Miocene Chilcotin Basalt is evident. The prominent hay meadow gently sloping from the ranch to the beaver ponds appears to be underlain by sequences of tills and gravels in excess of 100 m thick.

The section underlying claims to the east and north of the Bluff claims includes siltstones, greywackes, conglomerates and volcanic breccias and tuffs. Within this area, Upper Cretaceous to

Tertiary diorite, quartz diorite, monzonite and quartz feldspar porphyry stocks and dykes have intruded the volcanic and sedimentary package. A thin layer of vesicular basalt, possibly representative of the Miocene aged Chilcotin plateau basalt, outcrops on the cliff top above Butler Lake and is likely the youngest unit within the project area. In and around Butler Lake and the upper reaches of Butler Creek, the volcanic and sedimentary rocks have been extensively hornfelsed.

The most common intrusive type in the Butler Lake area is quartz feldspar porphyry. Extensive sections of intrusive breccia (quartz-feldspar porphyry and diorite) have been intersected in drill holes on the east side of Butler Creek.

Pyrite, pyrrhotite, chalcopyrite, bornite and molybdenite (and occasionally arsenopyrite) have variably mineralized both the intrusive rocks and the hornfelsed volcanics and sediments. In the Cow Trail Vein area, gold and silver bearing quartz veins and quartz-sulphide stockworks have developed, possibly as distal features to the porphyry mineralization.

## 7.0 Work Program

This year's program was carried out by Susan Rolston and geologist Roger MacDonald P.Geo. from March 23, 2019 to August 11, 2019. A total of 25 rocks were sampled of which 21 were sent for assay. Geologic mapping was carried out on 18 locations as the samples were collected. Work was performed on the BLUFF, SOUTH BUTLER, BUTTS2, BLAKE S and BLAKEEXT claims.



#### 7.1 Geochemical Rock Sampling

The 2019 rock geochemical program consisted of 25 rock grab samples taken by Susan Rolston and geologist Roger MacDonald on the BLUFF, SOUTH BUTLER, BUTTS2, BLAKE S and BLAKEEXT claims. On March 23, 2019 Susan Rolston traversed the Road Cut area and collected samples POI2 through POI4 to find the source of copper/gold mineralization exposed at the time the road cut was being widened. Samples POI5 through POI8 and WP3 were collected on the Bluff claim from the Painted Bluff, Slide and Hayfield Bluffs areas by Susan Rolston on May 19 and 27, 2019. After staking a two cell claim (BLAKEEXT) On July 27, 2019, Susan Rolston and assistant Brooke Rolston collected samples 24 through 36 from the BLAKE S and BLAKEEXT claims on July 28 to 31. During August 7 to 11, Roger MacDonald and Susan Rolston collected samples RM19001 through RM10009.

Samples consisted of approximately 1.2 to 2.0kg of rock taken from outcrop or float. Stations were located using a Garmin 62S GPS. Samples were then described, numbered and bagged into standard poly ore bags and transported to the Rolston ranch. Samples were stored in a secure location at the ranch until they were transported by truck to ALS Laboratories in Kamloops BC on September 5, 2019. Analyses were performed for 51 elements using industry standard ICP-Spectroscopy techniques, plus fire assay with atomic absorption finish for gold. See rock descriptions and selected assays in Tables 2 and 3 respectively and results represented in Figures 4, 5 and 6. Assay certificates are contained in Appendix 1.

Sample No.	UTM Zone	UTM E	UTM N	Description
POI2	10U	381461	5734506	O/C. med grey/green. Fg compact. qz vnlts to 2mm w/ ep on selvage. Mod fracture and bx. Tr py, cpy, ma. Diorite?
POI3	10U	381451	5734511	Float. Dark grey/green. As described above. Qz/ep clots to 2-4mm. Tr ma on fracture.
POI4	10U	381459	5734503	O/C. med green/grey. qz vnlts to 2mm w/ ep on selvage. Mod fracture and bx. Lapilli texture. Tr fg dissem py.
POI5	10U	382205	5734506	O/C. Pale biege to white. Qz vnlts to 4mm. Stongly bleached and silicified groundmass. Tr to 1% dissem Bo. And xtl tuff
POI6	10U	382168	5734488	O/C. mottle beige & white. Similar to PO#5. st shear and bx. Tr fg dissem py. And xtl tuff (?)
POI7	10U	382075	5734522	O/C. med grey. Local st hem. 12mm qz vn at 15mm shear w/ 2-3% fg py, 1-2% fg cpy. Silic groundmass w/ tr Bo blebs.
POI8	10U	382496	5734321	O/C. med grey. Massive fg groundmass supported and tuff. Fg tur vnlts 1-5mm w/ 3mm silic envelope. Tr fg cpy in vnlts.
WP3	10U	382189	5735392	O/C. black. 50mm massive compact vfg tur vn. Wk-mod shear and fracture. Qz vnlts to 3mm. Tr cpy and ma at vnlt margin.
24	10U	388367	573011	Float. Massive, compact, dark green to black. St chl/ep clots to 3mm. Wk fracture, mod-st shear. Fg and xtl tuff. Mod magnetic. Hornefelsed
25	10U	388401	5730841	Float. fg-mg hbld xtl tuff w/ 2-3mm anastamosing vntls & stringers. Mod-st fracture, wk ep locally mod at vnlts. Wk chl. Tr-1% vfg cpy, tr ma
26	10U	388428	5730850	Float. Mg hbld xtl tuff. Local lapillies to 15mm. Mod pervasive chl. Hematitic voids after mg dissem py. Tr cpy (?) wk fracture
27	10U	388434	5730852	Float. As described above. St hem bx over 2-3cm w/15-20% dissem py. 1-2% fg blebs cpy. Tr ma. Qz nlts to 2mm in bx. Mod chl, local ep on selvage
28	10U	388523	5730822	O/C. mg hbld xtl tuff, mod silic. Shattered dyke contact. Vuggy brittle shear
30	10U	388280	5731166	Float. Fg hbld xtl tuff w/ qz/ep vnlt to 2mm. Fg dissem py to 2% at hbld margins. Insufficient material for sample.
31	10U	388234	5731019	Float. Mod grey/green. Fg xtl/ash tuff. St fracture and brittle shear. Mod chl. Qz/ep vnlts to 2mm. Mod-st silic, tr local cpy
36	10U	388467	5730780	O/C. med green, massive fg augite(?) xtl/ash tuff. Local sub-mm amygdules. Tr fg dissem py and cpy.
RM19001	10U	388933	5730906	SO/C. med green. Fg-mg xtl tuff. Hem on fractures2-3% fg dissem py. 5m x 130m Pyritic/oxidized zone trending 130°
RM19002	10U	388966	5730875	Float. Blueish grey fg xtl ash tuff. St hem on fracture. 3-5% fg dissem py
RM19003	10U	389040	5730962	SO/C. dark green, dunn on wx surface. Mg xtl tuff (?) Hem on fractures, mod chl, mod silic, 2-3% fg dissem py
RM19004	10U	388835	5730898	O/C. light grey, banded xtl/ash tuff. St silic. 1-2% fg dissem py,
RM19005	10U	386655	5731971	Float. Med grey mg and xtl tuff (?) st silic. st hem on fracture. 10-15% fg dissem py
RM19006	10U	386515	5731934	O/C. blueish grey fg massive compact and xtl tuff. Dissem and blebby fg py to 1-2% associated with 2-3mm anastamosing vnlts to 2-3mm.
RM19007	10U	386508	5731998	O/C. gz vnlts and host rock as described above.
RM19008	10U	386525	5732026	O/C. gz vnlts as described above. Host rock st-int silic. St-int hem on fracture.
RM19009	10U	386557	5731941	O/C. blueish grey mg and xtl tuff. 3-4% fg-mg dissem py. Mod-st silic. St hem on fracture.
Abbreviations:	fg - fine gra	ined, mg -	medium gr	ained, cg - coarse grained, py - pyrite, cpy - chalcopyrite, hem - hematite, ep - epidote, ga - galena, bo - bornite
	sph - sphale	erite, chl -	chlorite, wl	k - weak, mod - moderate, st - strong, int - intense, qz - quartz, cb - carbonate, vnlt - veinlet, dissem - disseminated,
	az - azurite	, ma - mala	achite, str -	stringers, w/ - with, and - andesite, porph - porphyry, silic - silicification, O/C - outcrop, SO/C - sub-outcrop
	aspy - arse	nopyrite, C	FP - quartz	feldspar porphyry, HW-hanging wall, xtl - crystal, tr - trace, lim - limonite, tur - tourmaline, sx - suphides

Table 2 – Rock Sample Descriptions

SAMPLE No.	Ag	As	Cu	Mn	Мо	Pb	Sb	Zn	Au
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
PO 12	0.48	8.1	315.0	980	0.40	1.20	0.31	119	0.017
PO 13	0.37	6.3	344.0	1460	0.20	0.50	0.33	134	0.129
PO 14	1.25	72.0	333.0	1570	0.68	0.80	0.30	421	0.013
PO 15	0.02	0.9	4.3	89	0.27	1.10	0.13	7	<0.001
PO 17	9.52	18.6	7600.0	511	2.79	1.50	0.75	68	0.003
PO 18	1.15	2.9	1360.0	631	4.00	22.90	0.20	79	0.007
WP 3	0.12	32.5	265.0	179	1.16	0.40	0.24	12	0.001
25	0.49	8.9	526.0	661	0.34	4.10	0.63	57	0.002
26	0.06	24.7	15.8	2820	0.44	5.40	0.42	117	0.004
27	0.25	185.0	301.0	515	0.63	2.90	0.86	49	0.075
31	0.13	3.1	229.0	504	0.58	11.90	0.62	25	<0.001
36	2.44	16.9	1860.0	599	0.32	2.00	0.40	76	0.012
RM19001	0.03	9.0	50.6	219	3.02	2.70	0.16	20	0.003
RM19002	0.06	42.2	48.1	210	1.48	3.90	0.12	24	0.006
RM19003	0.24	10.7	42.5	691	5.11	3.80	0.15	85	0.013
RM19004	0.08	40.4	76.3	282	1.98	3.40	0.80	21	0.012
RM19005	0.80	156.5	461.0	410	0.51	5.10	0.42	38	0.041
RM19006	0.05	2.9	84.5	2460	0.22	1.50	0.10	75	0.003
RM19007	0.55	6.3	433.0	2210	0.19	2.20	0.22	90	0.024
RM19008	0.08	5.6	45.4	616	0.85	4.20	0.28	31	0.042
RM19009	0.05	5.9	66.7	319	0.75	2.30	0.08	33	0.001

Table 3 – Rock Geochemistry Assays







#### 7.2 Geological Mapping

During the period of August 7 to 11, 2019, Roger MacDonald and Susan Rolston traversed, the BUTTS2, SOUTH BUTLER and the newly staked BLAKEEXT claims. During the traverses 18 stations were mapped for rock type, alteration, mineralization and orientations of features. Stations were located using a Garmin 62S GPS. Mapping stations for samples RM19001 to RM19005 and RM19009 are described in Table 3. Stations MS138 to MS140 described in Table 4 include addition information for rock samples RM19006 to RM19008 respectively. Geological maps are provided in Figures 7 and 8.

Sample No.	UTM Zone	UTM E	UTM N	Description			
MS124	10U	388831	5731008	Float. Transition from bedded cherty siltstone (sub-aqueous andesitic tuff?) to Andesitic xtl tuff			
MS126	10U	388982	5730884	O/C. fg hornefelse. Dark grey to black. Mod to stongly magnetic.			
MS129	10U	389048	5730981	O/C. mg hbld xtl tuff. Hbld to 3mm in fg groundmass. Mod to strong pervasive and patchy ep on fracture oriented 355°/90°			
MS130	10U	389120	5730958	O/C. fg hornefelsed hbld xtl tuff. Anastamosing qz/ep str and vnlts over 70cm width oriented approximately 115°/45°SW			
MS132	10U	388649	5730738	O/C. Cliff at top of talus slope. Amygduloidal basalt intruded by locally brecciated dyke 3-5m. Polylithic zenoliths in dyke.			
MS134	10U	386492	5732058	Float on talus slope. Poorly sorted polylithic, matrix and locally clast supported agglomerate			
MS135	10U	386335	5731969	O/C. same as at MS134.			
MS136	10U	386315	5731930	O/C. same as at MS134.			
MS137	10U	386503	5731891	O/C. Dark grey to black fg compact ande ash/xtl tuff. Wk to mod hornefels. Wk to mod hem on fracture. st silic. Local anastamosing vnlts to 2mm			
MS138	10U	386515	5731934	O/C. fg ash/xtl tuff. 2-3mm anasamosing vnlts oriented 150°/60° SW w/ 1-3% fg dissem py			
MS139	10U	386508	5731998	O/C. fg ash/xtl tuff. 2-3mm anasamosing vnlts oriented 120°/60° SW w/ 1-3% fg dissem py			
MS140	10U         386525         5732026         O/C. as at MS139. st to int silic. St to int hem on fracture. Vnlts at 130°/70°SW						
Abbreviations:	ions:   fg - fine grained, mg - medium grained, cg - coarse grained, py - pyrite, cpy - chalcopyrite, hem - hematite, ep - epidote, ga - galena, bo - bornite						
	sph - sphal	erite, chl - ch	lorite, wk - w	reak, mod - moderate, st - strong, int - intense, qz - quartz, cb - carbonate, vnlt - veinlet, dissem - disseminated,			
	az - azurite	, ma - malac	hite, str - stri	ngers, w/ - with, ande - andesite, porph - porphyry, silic - silicification, O/C - outcrop, SO/C - sub-outcrop			
	aspy - arse	nopyrite, QF	P - quartz felo	dspar porphyry, HW-hanging wall, xtl - crystal, tr - trace, lim - limonite, tur - tourmaline, sx - suphides			
	hbld - horn	eblend					

 Table 4 - Geological Mapping Station Descriptions



![](_page_25_Figure_0.jpeg)

#### 8.0 Discussion and Interpretation

This year's program comprised rock geochemical and geological mapping on the BLUFF, SOUTH BUTLER, BUTTS2, BLAKE S and BLAKEEXT claims. A total of 25 rocks were sampled of which 21 were sent for assay. Geologic mapping was carried out on 18 locations as the samples were collected. The program was successful in extending a copper rich tourmaline breccia from its discovery outcrop to 500 metres to the north-west, 330° to 340° trend along the Hayfield Bluffs. Sampling in the area of the Painted Bluff extended that mineralized zone some 150 to the southeast along a 135° trend. Also, 550 metres to the east of the painted Bluff, the Slide zone sampling returned a 1360ppm Cu/22.9ppm Pb/1.15ppb Ag assay from outcrop that previously returned anomalous molybdenum tenors.

On the recently staked BLAKEEXT claim rock sample #36 returned assays of 1860ppm Cu and 2.44ppm Ag possibly indicating similar mineralization to the Math Showing located 1300 metres to the north north-east. In the St. Teresa area, located approximately 550 metres west of Butler Lake, sampling along a gossanous ridge returned two samples anomalous in copper; RM19005 @ 461ppm Cu and RM19007 @ 433ppm Cu.

Mapping in the areas of the Butler Lake Extension, BLAKEEXT, claim and the St. Teresa area indicate the areas are underlain by rocks typical of the Mount Moore Formation. One the BLAKEEXT claim, rocks consisted of andesitic crystal (xtl) and ash tuffs with lesser basaltic ash tuff intruded by a basaltic dyke. A contact was not indicated on the mapping between the andesitic and basaltic unit due to the inaccessibility of the precipitous cliffs in the area. Hornefelsed rocks at stations MS126 and MS130 indicate possible seeking to the southeast, which may be related to the dyke exposed in the cliff at station MS132. See Figure 8.

In the St. Teresa area, rocks typical of the Mount Moore Formation are dominated by fine grained (FG) andesite crystal (XTL) tuff with an isolated bed of polylithic agglomerate striking roughly east-west dipping north. A series of anastomosing northwest striking, steeply southwest dipping veinlets over 50 to 70 cm are exposed in a line of small bluffs situated in a northerly trend. Moderate to strong pervasive epidote and silica alteration is associated with the veinlets. This alteration is prevalent in the St. Teresa area as is in most other areas on the claims. See Figure 7.

Continued exploration on the BLAKE S claim is recommended to determine whether the mineralization found in rock sample #36 is related to the gossanous boulders located down train from sample #36. Further, additional mapping and rock sampling is recommended in the area of the Painted Bluff, Slide and Hayfield Bluffs to determine the extent of mineralized tourmaline breccia and its genetic association to porphyry mineralization located on the property.

# 9.0 Statement of Costs

Item	Sate	2019 mar	2019 may		yluį 2019				2019 aug				┢			-			Total
Man power		23	19	27	28	29	30	31	7	80	6	10	11	14 1	5 10		17 tota	il days/hours	
Roger MacDonald (Geo)	\$650.00 per day								0.50	1.00	1.00	1.00	0.50		_		_	4.00 days	\$2,600.00
Report writing and interpretation	\$650.00 per day													1.00	1.00	1.00	1.00	4.00 days	\$2,600.00
Susan Rolston (Field Assistant)	\$450.00 per day	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00						8.00 days	\$3,600.00
Susan Rolston (Travel)	\$35.00 per hr				8.00			8.00	8.00				8.00					32.00 hrs	\$1,120.00
Brooke Rolston (Field Assistant)	\$400.00 per day				0.50	1.00	1.00	0.50										3.00	\$1,200.00
																		0:00	
Rentals																		00:00	
Ranger	\$400.00 per day	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00			_		_	8.00 days	\$3,200.00
GPS	\$20.00 per day	1.00	1.00	1.00		1.00	1.00			2.00	2.00	2.00						11.00	\$220.00
Sat Ph	\$50.00 per day	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00						8.00	\$400.00
Radio	\$10.00 per day	1.00	1.00	1.00		2.00	2.00			2.00	2.00	2.00						13.00 days	\$130.00
Fuel	\$1.50 per litre												500.00					500.00 litres	\$750.00
Power Saw	\$22.00 per day	1.00				1.00	1.00			1.00	1.00	1.00						6.00	\$132.00
Sundries	\$25.00 per day	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00						8.00 days	\$200.00
Truck	\$150.00 per day								1.00				1.00					2.00 days	\$300.00
Food & Accom	\$120.00 per day	1.00	1.00	1.00		2.00	2.00			2.00	2.00	2.00						13.00 days	\$1,560.00
Driving kilometres	\$0.81 km				500.00			500.00	500.00				500.00					2000.00 km	\$1,620.00
Air Fair	1 per cost								\$400.00									\$400.00	\$400.00
Food (Travel Days)	\$50.00 per day				2.00			2.00	2.00				2.00					8.00 days	\$400.00
																		0.00	
Equipment																		0.00	
field equipment	1 per cost								\$50.00								-	\$50.00	\$50.00
																		0:00	
Geochem																		0:00	
Soil and Rock Sample Analysis	\$49.36 per sample												20.00					20.00 samples	\$987.20
Freight	1 per cost												\$100.00					\$100.00	\$100.00
																_			
																_	Tot	16	\$21,569.20

Table 5 - Statement of Costs

#### **10.0 Statements of Qualifications**

I, Roger C. MacDonald P.Geo, do hereby certify that,

- 1.) I currently reside at 8191 River Road, Richmond, BC, Canada, V6X 1X8 and I am self employed as a consulting geologist.
- This certificate applies to the Assessment Report on the Bluff Property dated November 9, 2019
- 3.) I graduated with a Bachelors Degree of Science (Department of Geology) from the University of British Columbia in 1988. I have worked twenty-eight years as a geologist, throughout the BC/Yukon Cordillera, NWT/Nunavut, Guiana Shield, SA, Canadian Shield in Ontario, Trudos ophiolite Complex, Cyprus and ophiolite massifs of SW Turkey, since my graduation. I am a member in good standing with the Engineers and Geoscientists BC.
- 4.) I have been involved in various exploration programs on the Bluff Property from 2004 through 2019.

Sealed and Signed at Vancouver, British Columbia, on November 12, 2019

**I**acDONA 35363

Roger C. MacDonald, P.Geo.

- I, Susan E Rolston, do hereby certify that
  - 1.) I currently reside at 6705 Bluff Lake Road, Tatla Lake, BC, V0L 1V0.
  - 2.) I have been working as a prospector and sampler for 14 years, primarily on my own mineral tenures.
  - 3.) I have worked for several companies in the mining and mineral exploration industry since 2005 as a prospector, sampler, core splitter, OHS Level 3 First Aid Attendant, cook and camp manager.
  - 4.) I completed the online "Mine 1003" course on Mining and Prospecting through the British Columbia Institute of Technology.
  - 5.) I am 100% Owner of Tchaikazan Resources Inc., a private exploration company.
  - 6.) I performed and supervised the work described in this report.

Signed at Tatla Lake, British Columbia, November 12, 2019.

Jersen Rabt

Susan E. Rolston

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Appendix I – Rock Geochemistry Assays

![](_page_33_Picture_0.jpeg)

# **GEOCHEMICAL PROCEDURE**

# **ME- MS41**

# **ULTRA- TRACE LEVEL METHODS USING ICP- MS AND ICP- AES**

#### SAMPLE DECOMPOSITION

Aqua Regia Digestion (GEO-AR01)

#### **ANALYTICAL METHOD**

#### Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, ment spectral interferences.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	25
Arsenic	As	ppm	0.1	10 000
Gold	Au	ppm	0.2	25
Boron	В	ppm	10	10 000
Barium	Ва	ppm	10	10 000
Beryllium	Ве	ppm	0.05	1 000
Bismuth	Ві	ppm	0.01	10 000
Calcium	Са	%	0.01	25
Cadmium	Cd	ppm	0.01	1 000
Cerium	Ce	ppm	0.02	500
Cobalt	Со	ppm	0.1	10 000
Chromium	Сг	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Си	ppm	0.2	10 000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.02	500

![](_page_34_Picture_0.jpeg)

# **ME- MS41**

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Mercury	Нд	ppm	0.01	10 000
Indium	In	ppm	0.005	500
Potassium	К	0/0	0.01	10
Lanthanum	La	ppm	0.2	10 000
Lithium	Li	ppm	0.1	10 000
Magnesium	Mg	%	0.01	25
Manganese	Mn	ppm	5	50 000
Molybdenum	Мо	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.05	500
Nickel	Ni	ppm	0.2	10 000
Phosphorus	Р	ppm	10	10 000
Lead	Pb	ppm	0.2	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.001	50
Sulphur	S	٥/٥	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	0.2	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Та	ppm	0.01	500
Tellurium	Те	ppm	0.01	500
Thorium	Th	ppm	0.2	10000
Titanium	Ti	%	0.005	10
Thallium	TI	ppm	0.02	10 000
Uranium	U	ppm	0.05	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.05	10 000
Yttrium	Υ	ppm	0.05	500
Zinc	Zn	ppm	2	10 000
Zirconium	Zr	ppm	0.5	500

**NOTE:** In the majority of geological matrices, data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte.

![](_page_35_Picture_0.jpeg)

# **GEOCHEMICAL PROCEDURE**

# **ME- MS41**

# **ULTRA- TRACE LEVEL METHODS USING ICP- MS AND ICP- AES**

#### SAMPLE DECOMPOSITION

Aqua Regia Digestion (GEO-AR01)

#### **ANALYTICAL METHOD**

#### Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, ment spectral interferences.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	25
Arsenic	As	ppm	0.1	10 000
Gold	Au	ppm	0.2	25
Boron	В	ppm	10	10 000
Barium	Ва	ppm	10	10 000
Beryllium	Ве	ppm	0.05	1 000
Bismuth	Ві	ppm	0.01	10 000
Calcium	Са	%	0.01	25
Cadmium	Cd	ppm	0.01	1 000
Cerium	Се	ppm	0.02	500
Cobalt	Со	ppm	0.1	10 000
Chromium	Сг	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10 000
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.02	500

![](_page_36_Picture_0.jpeg)

# **ME- MS41**

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT
Mercury	Нд	ppm	0.01	10 000
Indium	In	ppm	0.005	500
Potassium	К	0/0	0.01	10
Lanthanum	La	ppm	0.2	10 000
Lithium	Li	ppm	0.1	10 000
Magnesium	Mg	%	0.01	25
Manganese	Mn	ppm	5	50 000
Molybdenum	Мо	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.05	500
Nickel	Ni	ppm	0.2	10 000
Phosphorus	Р	ppm	10	10 000
Lead	Pb	ppm	0.2	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.001	50
Sulphur	S	٥/٥	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	0.2	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Та	ppm	0.01	500
Tellurium	Те	ppm	0.01	500
Thorium	Th	ppm	0.2	10000
Titanium	Ti	%	0.005	10
Thallium	TI	ppm	0.02	10 000
Uranium	U	ppm	0.05	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.05	10 000
Yttrium	Υ	ppm	0.05	500
Zinc	Zn	ppm	2	10 000
Zirconium	Zr	ppm	0.5	500

**NOTE:** In the majority of geological matrices, data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte.

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Total # Pages: 2 (A - D) Plus Appendix Pages Finalized Date: 17-5EP-2019 Account: TCHRES Page: 1

# KL19222053 CERTIFICATE

Project: Bluff

This report is for 21 Rock samples submitted to our lab in Kamloops, BC, Canada on 5-SEP-2019.

The following have access to data associated with this certificate: ROGER MACDONALD | SUSAN ROLSTON |

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

	ANALYTICAL PROCEDURES	
ALS CODE	DESCRIPTION	INSTRUMENT
Au-ICP21	Au 30g FA ICP-AES Finish	ICP-AES
ME-MS41	Ultra Trace Aqua Regia ICP-MS	

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

Signature: Colin Ramshaw, Vancouver Laboratory Manager

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		2103 Dollart North Vanco Phone: +1 (6 www.alsglo	ton Hwy uver BC V7H 04) 984 022 3bal.com/g	4 0A7 21 Fax: 4 eochemist	+1 (604) <u>9</u> 84 ry	0218		TATL	32 A LAKE B	C V0L 1V	0		ц.	Total Plus inalized [	# Pages: 7 5 Append Date: 17-5 Account:	z (A - U) ix Pages EP-2019 TCHRES	
								Proje	ct: Bluff								
									U	RTIFIC	ATE OF	ANAL	YSIS	KL1922	2053		
	Method Analyte	WEI-21 Recvd Wt.	ME-M541 Ag	ME-MS41 AI	ME-MS41 As	ME-MS41 Au	ME-MS41 8	ME-MS41 Ba	ME-MS41 Be	ME-MS41 Bi	ME-MS41 Ca	ME-MS41 Cd	ME-MS41 Ce	ME-MS41 Co	ME-MS41 Cr	ME-MS4I Cs	
Sample Description	Units	kg 0.02	0.0	% 0.01	ррт 0.1	ррт 0.02	0 t	01	ррт 0.05	ррт 0.01	% 0.01	ррт 0.01	ррт 0.02	ррш 0.1	ndd 1	0.05	
RM19001 BM10002		1.18 1.44	0.03	1.23	9.0 42.2	<0.02 <0.02	10 10 10	8 9	0.13 0.07	0.04 0.04	0.62 0.53	0.10 0.10	2.57 3.64	13.3 14.2	58 77	0.20 0.20	
RM19003 RM19004 RM19005		1.33	0.24 0.08 0.80	2.41 1.68 1.77	10.7 40.4 156.5	<0.02 <0.02 0.02	10 10 10	20 70 20 00 20 00	0.11 0.20 0.07	0.18 0.10 3.11	0.40 1.97 0.08	0.21 0.12 0.15	2.26 3.91 5.98	20.3 7.9 9.2	ഗതത	0.57 0.32 0.21	
RM1 9006		1.24	0.05	3.16	2.9	<0.02	<10	40	0.17	0.18	5.38	0.10	7.33	22.9	206	0.44	-
RM1 9007		1.25	0.55	2.74	6.3 6.3	<0.02	<u>6</u>	30	0.14	1.22 0.22	4.14	0.18 0.07	9.07 8.97	27.5 13.5	193 15	0.36 0.15	
RM1 9009		1.74	0.05	2.29	0.0 0 0	<0.02 <0.02	2 <mark>1</mark> 0	20.00	0.18 0.36	1.00	0.92	0.03	4.50 6.38	7.0 5.9	17 5	0.24	
25 26		1.08	0.06	2.87	24.7	<0.02	<10	10	0.49	0.10	14.85	0.14	2.40	18.9	13	0.32	-
27		1.55	0.25	2.97	185.0	0.08	410	<10 50	0.15	0.35	2.21	0.09	1.23	67.1 3.3	49	0.40	-
31		1.50 2.05	0.13	0.69 4.08	3.1 16.9	<0.02	<10 <10	р С	0.20	0.06	0.67	0.36	1.15	36.8	10	0.63	-
PO 12		2.49	0.48	2.89	8.1	<0.02	<10	10	D.10	0.06	1.42	0.59	1.35	11.7	21	0.30	-
PO 13		2.37	0.37	3.50	6.3 72.0	0.11	410	20	0.08	0.05	0.68	0.08 3.63	1.07	15.4	52 28	0.60	
PO 14		1.93	cz.1 0.02	4.30	0.5/	<0.02	05	10	0.11	0.01	1.50	0.04	7.26	0.8	ŝ	0.16	
		1.70	9.52 1.15	3.15 2.26	18.6 2.9	<0.02<0.02	10 10	01	0.14 0.19	0.10 0.25	1.84 1.86	1.34 0.58	2.03 4.56	18.2 8.4	<b>0</b> 1	0.10 0.26	
WP 3		1.81	0.12	0.70	32.5	<0.02	60	10	0.05	0.46	0.44	0.09	0.97	23.8	12	0.13	T

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

To: TCHAIKAZAN RESOURCES INC.

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Page: 2 - B Total # Pages: 2 (A - D) Plus Appendix Pages Finalized Date: 17-SEP-2019 Account: TCHRES

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	ME-MS∡1 Nb ppm 0 05	0.05 0.05 0.06 0.06 0.06 0.06 0.10 0.06
22053	ME-MS41 Na % 0.01	0.08 0.03 0.03 0.03 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05
KL192	ME-MS41 Mo ppm 0.05	3.02 5.148 5.148 0.51 0.51 0.22 0.34 0.358 0.358 0.358 0.368 0.368 0.20 0.20 0.20 0.27 1.16
YSIS	ME-MS41 Mn 5	219 691 691 691 616 616 616 616 504 504 504 504 504 504 504 504 504 504
F ANAI	ME-MS41 Mg % 0.01	1,12 1,12 1,14 0,57 1,148 0,57 1,148
ATE O	ME-MS41 LI ppm 0.1	7.0 5.9 7.2 6.7 11.7 11.7 11.6 11.6 11.5 11.5 12.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1
ERTIFIC	ME-MS41 La ppm 0.2	100 100 100 100 100 100 100 100
υ	ME-MS41 K % 0.01	$\begin{array}{c} 0.04\\ 0.02\\ 0.04\\ 0.02\\ 0.03\\ 0.02\\ 0.03\\ 0.02\\ 0.03\\ 0.02\\ 0.03\\ 0.02\\$
	ME-MS41 In ppm 0.005	0.007 0.010 0.018 0.028 0.048 0.057 0.014 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.014 0.005 0.0163 0.018 0.005 0.005 0.005
	ME-MS41 Hg ppm 0.01	0.05 0.01 0.01 0.01 0.01 0.01 0.01 0.01
	ME-MS41 Hf ppm 0.02	0.31 0.32 0.37 0.37 0.360 0.46 0.46 0.46 0.46 0.40 0.07 0.07 0.07 0.07 0.07
	ME-MS41 Ge ppm 0.05	$\begin{array}{c} 0.08\\ 0.06\\ 0.06\\ 0.17\\ 0.18\\ 0.18\\ 0.18\\ 0.18\\ 0.18\\ 0.12\\ 0.18\\ 0.18\\ 0.12\\ 0.12\\ 0.18\\ 0.14\\ 0.12\\ 0.05\\ 0.05\\ 0.05\\ 0.05\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.07\\ 0.01\\ 0.07\\ 0.01\\ 0.07\\ 0.01\\$
	ME-MS41 Ga ppm 0.05	5.22 5.56 6.71 8.50 8.30 9.30 8.12 8.12 8.12 8.28 9.79 9.79 5.87 5.87 5.87 2.14
	ME-M541 Fe 0.01	2.86 5.66 5.66 5.70 7.81 7.01 7.01 7.74 7.77 7.42 7.71 7.42 7.71 7.57 7.57 7.57 7.57 7.57 7.57 7.57
	ME-MS41 Cu ppm 0.2	50.6 48.1 48.1 48.1 48.4 45.4 45.4 65.6 76.0 3015 305 15.8 315 305 15.8 303 315 15.8 303 315 15.8 303 15.8 303 15.8 10 10 229 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 226 1380 266 15.8 15.8 15.8 15.8 15.8 15.8 15.8 15.8
~	Method Analyte Units LOD	
	le Description	000000 000000 000000 000000 000000
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								Proje	ct: Bluff							
									5	RTIFIC	ATE OI	F ANAL	YSIS	KL192	22053	
Sample Description	Method Analyte Units LOD	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 5 % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc DPm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS4} Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2	ME-MS41 Ti 8.005
RM19001 RM19002 RM19003 RM19003 RM19004		4 12 8 8 3 5 8 8 5 5 8 8 5 7 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	880 580 550 250	2:7 3:8 3:4 3.4	0.9 0.9 0.5 7 7	0.027 0.004 0.001 0.001	0.67 1.05 0.35 0.04	0.16 0.12 0.80 0.80	ក្ល ល ល ថ 4 ល ល ល ល ហ ហ	0.5 0.5 0.4 5.0	0.2 0.2 0.4 0.4	23.4 14.8 23.5 57.1 7.4	0.01 0.01 0.01 0.01 0.01	0.12 0.11 0.35 0.04	0.2 0.2 0.2 0.4	0.202 0.200 0.107 0.162 0.162
KM19005 RM19007 RM19008 RM19008		6.0 51.2 49.2 24.8 10.9	590 560 380 380	2:2 2:2 2:3 2:3 2:3	2 9 9 7 7 7 6 9 9 7 7 7 6	0.001 0.001 0.002 0.002	0.21 0.68 0.46 1.20	0.10 0.28 0.08 0.08	4.7 7.3 8.5 7.3 8.5	0.5	0.8 77 8 9 0.8 7 7 8 9 7 7 7 8 9	77.1 33.3 8.2 31.7 51.7	0.0 0.0 0.0 0.0 0 0 0 0 0 0 0	0.24 1.30 0.19 0.19	0.5	0.253 0.245 0.243 0.099 0.128
25 27 21 31 9012 P013 P015		3.7 11.1 10.1 4.0 12.4 15.6 31.9 15.6 1.1	400 90 300 370 370 370 370 370 370		2.7 0.1 1.5 1.7 2.7 2.7 2.7 0.9	6.001 6.001 6.001 6.001 6.001 6.001 6.001	0.49 0.01 0.01 0.01 0.01 0.01 0.01	0.42 0.42 0.40 0.31 0.33 0.33 0.33	2 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.5 0.2 0.2 0.2 0.2 0.2 0.2	0.2 0.2 0.6 0.6 0.7 0.7 0.7	27.0 27.0 21.9 21.9 21.9 21.9	2000 2000 2000 2000 2000 2000 2000 200	0.03 0.03 0.03 0.06 0.00 0.00 0.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.020 0.151 0.151 0.052 0.194 0.194 0.100 0.102 0.102
2104 8104		. ດູ ຜ ເອັ ຜີ ເ	440 440 440	1.5 22.9 0.4	0 7 0 7 7 7	<ul> <li>&lt;0.001</li> <li>&lt;0.01</li> <li>&lt;0.001</li> <li>&lt;0.001</li> </ul>	0.65 -0.05	0.75 0.20 0.24	で、 2, 8 0, 0 0, 0	1.1 0.2 ^0.2	2.0 0.3 0.3	33.5 8.6 9.	0.01 0.02 0.01	0.02	0 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.113 0.050

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o: TCHAIKAZAN RESOURCES INC. BOX 32 TATLA LAKE BC VOL 1V0	Project: Bluff	CERTIFICATE OF	IE-M541 Au-ICP21 Zr Au Dom Dom	0.5 0.001	8.2 0.003 8.5 0.006	2.4 0.013 10.0 0.012	8.6 0.041	16.9 0.003 21.1 0.024	14.1 0.D42 5.0 0.D42	5.7 0.002	1.1 0.004 3.4 0.075	1.7 <0.001	2.4 0.012 1.2 0.017	0.7 0.129	1.0 0.013 2.4 <0.003	2.0 0.003	2.1 0.007	1.4 0.001	
F			ME-MS41 A Zn pom	2	20	85 21	38	25 90	31	57	117 40	25	76 119	134	421	58	62	2	
4 0218			ME-MS41 Y Ppm	0.05	8.22 8.54	4.01 9.55	6.11	14.10 14.55	15.95	7.94	5.68 5.33	11.60	3.83 2.76	1.81	2.44	4 26 4 26	7.82	2.77	
+1 (604) 984 :ry			ME-MS41 W	0.05	0.07 0.06	0.10 0.14	0,44	0.45	0.37	0.36	0.56	0.13	0.16 0.44	0.28	0.62	20.0>	0.54	0.23	
H 0A7 21 Fax: - Jeochemist				ME-MS41 V	-	62 53	52 51	44	121	94	50 39	49 163	10	199 103	62	108	21	28	÷
d. ton Hwy urver BC V7H (04) 984 02: bal.com/g			ME-MS41 U	0.05	0.85 0.60	0.07 0.14	0.68	1.57 4.68	0.84	0.08	<0.05	0.06	0.06 <0.05	0.05	0.09	0.31	0.49	60°C	
ALS Canada Lt 2103 Doliar North Vanco Phone: +1 (6 www.alsglo			ME-MS41 TI	о.02	0.02 <0.02	0.03 0.04	0.04	0.02	0.02	<0.02 0.03	<0.02	<0.03	0.02 0.02	0.03	0.03	<0.02	0.02	<0.02	
			Method Analyte	LOD													1		
				Sample Description	RM19001 RM19002	RM 19003 RM 19004	RM19005	RM19006	RM1 9008	RM19009 25	26	27 31	36 PO 12	PO 13	PO 14	PO 15	PO 18	۵ ۸	

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ALS Canada Ltd. 2103 Dollarton Hwy North Vancouver BC V7H 0A7 Phone: +1 (604) 984 0218 Www.alsglobal.com/geochemistry www.alsglobal.com/geochemistry Project: Bluff CERTIFICATE OF ANALYSIS	CERTIFICATE COMMENTS	ANALYTICAL COMMENTS Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g). ME-MS41	LABORATORY ADDRESSES Processed at ALS Kamloops located at 2953 Shuswap Drive, Kamloops, BC, Canada. CRU-31 CRU-31 LOG-22 PUL-QC SPL-21 WEI-21	Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada. Au-ICP21	
ALS		Applies to Method:	Applies to Method:	Applies to Method:	