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BC Geological Survey

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

TOTAL COST: $\$ 21,569.20$

SIGNATURE(S):


NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-4-660 YEAR OF WORK: 2019

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): SOW \#5751620 March 23, 2019 to August 16, 2019

## PROPERTY NAME: Bluff

CLAIM NAME(S) (on which the work was done): BLUFF, SOUTH BUTLER, BUTTS2, BLAKE S, BLAKE EXT

COMmOdities sought: $\mathrm{Cu}, \mathrm{Au}, \mathrm{Mo}, \mathrm{Ag}, \mathrm{Zn}$
MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:


## MAILING ADDRESS:

P.O. Box 4116, Williams Lake, BC, Canada, V2G 2V2

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

1) Susan Elizabeth Rolston 2) $\qquad$

MAILING ADDRESS:
P.O. Box 4116, Williams Lake, BC, Canada, V2G 2V2

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Cretaceous volcanics, andesite, basalt, rhyolite flows intruded by quartz feldspar porphyry, diorite and feldspar porhyry.
mineralization 1 - Cu/Au porphyry and qz/carb veins, fracture controlled veins $3 \mathrm{~km} \times 2.5 \mathrm{~km} .2-\mathrm{qz}, \mathrm{Pb}, \mathrm{Zn}, \mathrm{Ag}$ veins $1 \mathrm{~km} \times 1 \mathrm{~km}$
$3-\mathrm{Au}$, Aspy in clay altered and silicified shear $200 \mathrm{~m} \times 400 \mathrm{~m}$, Major structures NNW $\times$ SSE and E $\times$ W

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: $12422,13780,17080,18036,20860 \mathrm{~A}$
20860B, 21967, 28547, 29526


# TCHAIKAZAN RESOURCES INC. 

Box 32, Tatla Lake, British Columbia, Canada
V0L 1V0
Ph: 2504761218

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

Clinton Mining Division
BCGS 092 N 77

Lat $51^{\circ} 43^{\prime} \mathbf{2 0 \prime \prime}$ N Long $124^{\circ} 37^{\prime} 20^{\prime \prime}$ W

# ASSESSMENT REPORT <br> on the <br> 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 $51^{\circ} 45^{\prime} 25^{\prime \prime} \mathrm{N}$ Longitude $124^{\circ} 41^{\prime} 04^{\prime \prime} \mathrm{W}$.

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 $3190 \mathrm{ppm}, 2330 \mathrm{ppm}$ and 6250 ppm respectively. Sample Blu1 also ran $2.02 \mathrm{~g} / \mathrm{t} \mathrm{Au}, 2260 \mathrm{ppm}$ As and 889 ppm 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: $21.95 \mathrm{~m} @ 221.0 \mathrm{ppm}$ Cu from 136.2 m to 158.1 m and $40.2 \mathrm{~m} @ 146.5 \mathrm{ppm}$ Cu from 170.2 m to 210.4 m . Sample Cow2-107, float located directly beneath a gossanous outcrop on the western bank of , returned assays of $2.01 \mathrm{gpt} \mathrm{Au}, 1070 \mathrm{gpt} \mathrm{Ag}, 5.02 \% \mathrm{~Pb}$ and $5.25 \% \mathrm{Zn}$, 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 $\mathrm{Cu} / \mathrm{As} / \mathrm{Sb}$ 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 $\mathrm{Cu} @+100 \mathrm{ppm} / \mathrm{As} / \mathrm{Sb}$ anomalies. One over 100 metres on Line $93+00 \mathrm{~N}$ from 110+50E to $111+25 \mathrm{E}$ and a two station anomaly on the south-west end of the talus traverse TT18002 and TT18003. A weaker $\mathrm{Cu} / \mathrm{As} / \mathrm{Sb}$ anomaly is located at the west end of line $95+00 \mathrm{~N}$ between $94+25 \mathrm{E}$ and $95+25 \mathrm{E}$. 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 93 N . Continued geochemical sampling and mapping is recommended to the south-east of Butler Lake in the vicinity of the $\mathrm{Cu} / \mathrm{As} / \mathrm{Sb}$ anomaly at the west end of line 95 N .

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 $330^{\circ}$ to $340^{\circ}$ 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 $135^{\circ}$ trend. Also, 550 metres to the east of the painted Bluff, the Slide zone sampling returned a $1360 \mathrm{ppm} \mathrm{Cu} / 22.9 \mathrm{ppm} \mathrm{Pb} / 1.15 \mathrm{ppb}$ Ag assay from outcrop that previously returned anomalous molybdenum tenors.

On the recently staked BLAKEEXT claim rock sample 36 returned assays of 1860 ppm Cu and 2.44 ppm 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) $\mathrm{Cu} / \mathrm{Au}$ deposit located some 70 km to the East; The Skinner Mountain lode $\mathrm{Ag} / \mathrm{Au}$ veins, 18 km east and the Blackhorn Mountain lode $\mathrm{Au} / \mathrm{Ag}$ veins 20 km to the south.

### 2.0 Location and Access

The property is located on BCGS mapsheet 092 N 077 and centered on Lat $51^{\circ} 45^{\prime} 54^{\prime \prime} \mathrm{N}$ Long $124^{\circ} 39^{\prime} 36^{\prime \prime} \mathrm{W}$. 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.

## TCHAIKAZAN RESOURCES INC.



FIGURE 1
LOCATION MAP OF BRITISH COLUMBIA

### 3.0 Claims

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

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

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 100 m 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 $2.6-\mathrm{oz} /$ ton gold and $20.5 \mathrm{oz} /$ 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 157 m grading $0.18 \%$ copper including 17 m 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 ( 875 m .) 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 17.8 km 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 $3190 \mathrm{ppm}, 2330 \mathrm{ppm}$ and 6250 ppm respectively. Sample Blu1 also ran $2.02 \mathrm{~g} / \mathrm{t} \mathrm{Au}, 2260 \mathrm{ppm}$ As and 889 ppm 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: 21.95 m @ 221.0 ppm Cu from 136.2 m to 158.1 m and 40.2 m @ 146.5 ppm Cu from 170.2 m to 210.4 m . Sample Cow2-107, float located directly beneath a gossanous outcrop on the western bank of , returned assays of $2.01 \mathrm{gpt} \mathrm{Au}, 1070 \mathrm{gpt} \mathrm{Ag}, 5.02 \% \mathrm{~Pb}$ and $5.25 \% \mathrm{Zn}$, 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 $\mathrm{Cu} / \mathrm{As} / \mathrm{Sb}$ 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 $\mathrm{Cu} @+100 \mathrm{ppm} / \mathrm{As} / \mathrm{Sb}$ anomalies. One over 100 metres on Line $93+00 \mathrm{~N}$ from 110+50E to $111+25$ E and a two station anomaly on the south-west end of the talus traverse TT18002 and TT18003. A weaker $\mathrm{Cu} / \mathrm{As} / \mathrm{Sb}$ anomaly is located at the west end of line $95+00 \mathrm{~N}$ between $94+25 \mathrm{E}$ and $95+25 \mathrm{E}$. 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 $\mathrm{Cu} / 2,630 \mathrm{ppm}, \mathrm{Ag} / 3.32 \mathrm{ppm}$ and $\mathrm{Zn} / 259$. 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 2.0 kg 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 ICPSpectroscopy 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 |
| :---: | :---: | :---: | :---: | :---: |
| POI 2 | 10 U | 381461 | 5734506 | O/C. med grey/green. Fg compact. qz vnlts to 2 mm w/ ep on selvage. Mod fracture and bx. $\operatorname{Tr}$ py, cpy, ma. Diorite? |
| POI3 | 10 U | 381451 | 5734511 | Float. Dark grey/green. As described above. Qz/ep clots to 2-4mm. Tr ma on fracture. |
| POI4 | 10 U | 381459 | 5734503 | O/C. med green/grey. qz vnlts to 2 mm w/ ep on selvage. Mod fracture and bx. Lapilli texture. Tr fg dissem py. |
| POI5 | 10 U | 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 | 10 U | 382168 | 5734488 | O/C. mottle beige \& white. Similar to PO\#5. st shear and bx. Tr fg dissem py. And xtl tuff (?) |
| POI7 | 10 U | 382075 | 5734522 | O/C. med grey. Local st hem. 12 mm qz vn at 15 mm shear w/ 2-3\% fg py, 1-2\% fg cpy. Silic groundmass w/ tr Bo blebs. |
| POI8 | 10 U | 382496 | 5734321 | $\mathrm{O} / \mathrm{C}$. med grey. Massive fg groundmass supported and tuff. Fg tur vnlts $1-5 \mathrm{~mm} \mathrm{w} / 3 \mathrm{~mm}$ silic envelope. Tr fg cpy in vnlts. |
| WP3 | 10U | 382189 | 5735392 | $\mathrm{O} / \mathrm{C}$. black. 50 mm massive compact vfg tur vn. Wk-mod shear and fracture. Qz vnlts to 3 mm . Tr cpy and ma at vnlt margin. |
| 24 | 10U | 388367 | 573011 | Float. Massive, compact, dark green to black. St chl/ep clots to 3 mm . Wk fracture, mod-st shear. Fg and xtl tuff. Mod magnetic. Hornefelsed |
| 25 | 10 U | 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 15 mm . Mod pervasive chl. Hematitic voids after mg dissem py. $\operatorname{Tr} \mathrm{cpy}$ (?) 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 2 mm in bx. Mod chl, local ep on selvage |
| 28 | 10 U | 388523 | 5730822 | O/C. mg hbld xtl tuff, mod silic. Shattered dyke contact. Vuggy brittle shear |
| 30 | 10 U | 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 | 10 U | 388234 | 5731019 | Float. Mod grey/green. Fg xtl/ash tuff. St fracture and brittle shear. Mod chl. Qz/ep vnlts to 2 mm . Mod-st silic, tr local cpy |
| 36 | 10 U | 388467 | 5730780 | O/C. med green, massive fg augite(?) xtl/ash tuff. Local sub-mm amygdules. Tr fg dissem py and cpy. |
| RM19001 | 10 U | 388933 | 5730906 | SO/C. med green. Fg-mg xtl tuff. Hem on fractures2-3\% fg dissem py. $5 \mathrm{~m} \times 130 \mathrm{~m}$ Pyritic/oxidized zone trending $130^{\circ}$ |
| RM19002 | 10 U | 388966 | 5730875 | Float. Blueish grey fg xtl ash tuff. St hem on fracture. 3-5\% fg dissem py |
| RM19003 | 10 U | 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 | 10 U | 388835 | 5730898 | O/C. light grey, banded xtl/ash tuff. St silic. 1-2\% fg dissem py, |
| RM19005 | 10 U | 386655 | 5731971 | Float. Med grey mg and xtl tuff (?) st silic. st hem on fracture. 10-15\% fg dissem py |
| RM19006 | 10 U | 386515 | 5731934 | $\mathrm{O} / \mathrm{C}$. blueish grey fg massive compact and xtl tuff. Dissem and blebby fg py to $1-2 \%$ associated with $2-3 \mathrm{~mm}$ anastamosing vnlts to $2-3 \mathrm{~mm}$. |
| RM19007 | 10 U | 386508 | 5731998 | O/C. qz vnlts and host rock as described above. |
| RM19008 | 10 U | 386525 | 5732026 | O/C. qz vnlts as described above. Host rock st-int silic. St-int hem on fracture. |
| RM19009 | 10 U | 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 grained, mg - medium grained, cg - coarse grained, py - pyrite, cpy - chalcopyrite, hem - hematite, ep - epidote, ga - galena, bo - bornite |  |  |  |
|  | sph - sphalerite, chl - chlorite, wk - weak, mod - moderate, st - strong, int - intense, qz - quartz, cb - carbonate, vnlt - veinlet, dissem - disseminated, |  |  |  |
|  | az - azurite, ma - malachite, str - stringers, w/ - with, and - andesite, porph - porphyry, silic - silicification, O/C - outcrop, SO/C - sub-outcrop |  |  |  |
|  | aspy - arsenopyrite, QFP - 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 | Mo | 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 | 10 U | 388831 | 5731008 | Float. Transition from bedded cherty siltstone (sub-aqueous andesitic tuff?) to Andesitic xtl tuff |
| MS126 | 10 U | 388982 | 5730884 | O/C. fg hornefelse. Dark grey to black. Mod to stongly magnetic. |
| MS129 | 10 U | 389048 | 5730981 | O/C. mg hbld xtl tuff. Hbld to 3 mm in fg groundmass. Mod to strong pervasive and patchy ep on fracture oriented $355^{\circ} / 90^{\circ}$ |
| MS130 | 10 U | 389120 | 5730958 | O/C. fg hornefelsed hbld xtl tuff. Anastamosing qz/ep str and vnlts over 70 cm width oriented approximately $115^{\circ} / 45^{\circ} \mathrm{SW}$ |
| MS132 | 10 U | 388649 | 5730738 | O/C. Cliff at top of talus slope. Amygduloidal basalt intruded by locally brecciated dyke 3-5m. Polylithic zenoliths in dyke. |
| MS134 | 10 U | 386492 | 5732058 | Float on talus slope. Poorly sorted polylithic, matrix and locally clast supported agglomerate |
| MS135 | 10 U | 386335 | 5731969 | O/C. same as at MS134. |
| MS136 | 10 U | 386315 | 5731930 | O/C. same as at MS134. |
| MS137 | 10 U | 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 2 mm |
| MS138 | 10 U | 386515 | 5731934 | O/C. fg ash/xtl tuff. 2-3mm anasamosing vnlts oriented $150^{\circ} / 60^{\circ} \mathrm{SW} \mathrm{w} / 1-3 \% \mathrm{fg}$ dissem py |
| MS139 | 10 U | 386508 | 5731998 | $\mathrm{O} / \mathrm{C}$. fg ash/xtl tuff. 2-3mm anasamosing vnlts oriented $120^{\circ} / 60^{\circ} \mathrm{SW} \mathrm{w} / 1-3 \% \mathrm{fg}$ dissem py |
| MS140 | 10 U | 386525 | 5732026 | O/C. as at MS139. st to int silic. St to int hem on fracture. Vnlts at $130^{\circ} / 70^{\circ} \mathrm{SW}$ |
| Abbreviation | fg - fine grained, mg - medium grained, cg - coarse grained, py - pyrite, cpy - chalcopyrite, hem - hematite, ep - epidote, ga - galena, bo - bornite |  |  |  |
|  | sph - sphalerite, chl - chlorite, wk - weak, mod - moderate, st - strong, int - intense, qz - quartz, cb - carbonate, vnlt - veinlet, dissem - disseminated, |  |  |  |
|  | az - azurite, ma - malachite, str - stringers, $\mathrm{w} /$ - with, ande - andesite, porph - porphyry, silic - silicification, O/C - outcrop, SO/C - sub-outcrop |  |  |  |
|  | aspy - arsenopyrite, QFP - quartz feldspar porphyry, HW-hanging wall, xtl - crystal, tr - trace, lim - limonite, tur - tourmaline, sx - suphides |  |  |  |
|  | hbld - horneblend |  |  |  |

Table 4 - Geological Mapping Station Descriptions



### 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, $330^{\circ}$ to $340^{\circ}$ trend along the Hayfield Bluffs. Sampling in the area of the Painted Bluff extended that mineralized zone some 150 to the southeast along a $135^{\circ}$ trend. Also, 550 metres to the east of the painted Bluff, the Slide zone sampling returned a $1360 \mathrm{ppm} \mathrm{Cu} / 22.9 \mathrm{ppm} \mathrm{Pb} / 1.15 \mathrm{ppb}$ Ag assay from outcrop that previously returned anomalous molybdenum tenors.

On the recently staked BLAKEEXT claim rock sample \#36 returned assays of 1860 ppm Cu and 2.44 ppm 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



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 1 X8 and I am self employed as a consulting geologist.
2.) 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


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.

Susan E. Rolston

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Appendix I - Rock Geochemistry Assays

## 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 $(0.50 \mathrm{~g})$ 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 | 10000 |
| Gold | Au | ppm | 0.2 | 25 |
| Boron | B | ppm | 10 | 10000 |
| Barium | Ba | ppm | 10 | 10000 |
| Beryllium | Be | ppm | 0.05 | 1000 |
| Bismuth | Bi | ppm | 0.01 | 10000 |
| Calcium | Ca | \% | 0.01 | 25 |
| Cadmium | Cd | ppm | 0.01 | 1000 |
| Cerium | Ce | ppm | 0.02 | 500 |
| Cobalt | Co | ppm | 0.1 | 10000 |
| Chromium | Cr | ppm | 1 | 10000 |
| Cesium | Cs | ppm | 0.05 | 500 |
| Copper | Cu | ppm | 0.2 | 10000 |
| Iron | Fe | \% | 0.01 | 50 |
| Gallium | Ga | ppm | 0.05 | 10000 |
| Germanium | Ge | ppm | 0.05 | 500 |
| Hafnium | Hf | ppm | 0.02 | 500 |

## ME- MS41

| ELEMENT | SYMBOL | UNITS | LOWER LIMIT | UPPER LIMIT |
| :---: | :---: | :---: | :---: | :---: |
| Mercury | Hg | ppm | 0.01 | 10000 |
| Indium | In | ppm | 0.005 | 500 |
| Potassium | K | \% | 0.01 | 10 |
| Lanthanum | La | ppm | 0.2 | 10000 |
| Lithium | Li | ppm | 0.1 | 10000 |
| Magnesium | Mg | \% | 0.01 | 25 |
| Manganese | Mn | ppm | 5 | 50000 |
| Molybdenum | Mo | ppm | 0.05 | 10000 |
| Sodium | Na | \% | 0.01 | 10 |
| Niobium | Nb | ppm | 0.05 | 500 |
| Nickel | Ni | ppm | 0.2 | 10000 |
| Phosphorus | P | ppm | 10 | 10000 |
| Lead | Pb | ppm | 0.2 | 10000 |
| Rubidium | Rb | ppm | 0.1 | 10000 |
| Rhenium | Re | ppm | 0.001 | 50 |
| Sulphur | S | \% | 0.01 | 10 |
| Antimony | Sb | ppm | 0.05 | 10000 |
| Scandium | Sc | ppm | 0.1 | 10000 |
| Selenium | Se | ppm | 0.2 | 1000 |
| Tin | Sn | ppm | 0.2 | 500 |
| Strontium | Sr | ppm | 0.2 | 10000 |
| Tantalum | Ta | ppm | 0.01 | 500 |
| Tellurium | Te | ppm | 0.01 | 500 |
| Thorium | Th | ppm | 0.2 | 10000 |
| Titanium | Ti | \% | 0.005 | 10 |
| Thallium | T | ppm | 0.02 | 10000 |
| Uranium | U | ppm | 0.05 | 10000 |
| Vanadium | V | ppm | 1 | 10000 |
| Tungsten | W | ppm | 0.05 | 10000 |
| Yttrium | Y | ppm | 0.05 | 500 |
| Zinc | Zn | ppm | 2 | 10000 |
| 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.

## 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 $(0.50 \mathrm{~g})$ 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 | 10000 |
| Gold | Au | ppm | 0.2 | 25 |
| Boron | B | ppm | 10 | 10000 |
| Barium | Ba | ppm | 10 | 10000 |
| Beryllium | Be | ppm | 0.05 | 1000 |
| Bismuth | Bi | ppm | 0.01 | 10000 |
| Calcium | Ca | \% | 0.01 | 25 |
| Cadmium | Cd | ppm | 0.01 | 1000 |
| Cerium | Ce | ppm | 0.02 | 500 |
| Cobalt | Co | ppm | 0.1 | 10000 |
| Chromium | Cr | ppm | 1 | 10000 |
| Cesium | Cs | ppm | 0.05 | 500 |
| Copper | Cu | ppm | 0.2 | 10000 |
| Iron | Fe | \% | 0.01 | 50 |
| Gallium | Ga | ppm | 0.05 | 10000 |
| Germanium | Ge | ppm | 0.05 | 500 |
| Hafnium | Hf | ppm | 0.02 | 500 |

## ME- MS41

| ELEMENT | SYMBOL | UNITS | LOWER LIMIT | UPPER LIMIT |
| :---: | :---: | :---: | :---: | :---: |
| Mercury | Hg | ppm | 0.01 | 10000 |
| Indium | In | ppm | 0.005 | 500 |
| Potassium | K | \% | 0.01 | 10 |
| Lanthanum | La | ppm | 0.2 | 10000 |
| Lithium | Li | ppm | 0.1 | 10000 |
| Magnesium | Mg | \% | 0.01 | 25 |
| Manganese | Mn | ppm | 5 | 50000 |
| Molybdenum | Mo | ppm | 0.05 | 10000 |
| Sodium | Na | \% | 0.01 | 10 |
| Niobium | Nb | ppm | 0.05 | 500 |
| Nickel | Ni | ppm | 0.2 | 10000 |
| Phosphorus | P | ppm | 10 | 10000 |
| Lead | Pb | ppm | 0.2 | 10000 |
| Rubidium | Rb | ppm | 0.1 | 10000 |
| Rhenium | Re | ppm | 0.001 | 50 |
| Sulphur | S | \% | 0.01 | 10 |
| Antimony | Sb | ppm | 0.05 | 10000 |
| Scandium | Sc | ppm | 0.1 | 10000 |
| Selenium | Se | ppm | 0.2 | 1000 |
| Tin | Sn | ppm | 0.2 | 500 |
| Strontium | Sr | ppm | 0.2 | 10000 |
| Tantalum | Ta | ppm | 0.01 | 500 |
| Tellurium | Te | ppm | 0.01 | 500 |
| Thorium | Th | ppm | 0.2 | 10000 |
| Titanium | Ti | \% | 0.005 | 10 |
| Thallium | T | ppm | 0.02 | 10000 |
| Uranium | U | ppm | 0.05 | 10000 |
| Vanadium | V | ppm | 1 | 10000 |
| Tungsten | W | ppm | 0.05 | 10000 |
| Yttrium | Y | ppm | 0.05 | 500 |
| Zinc | Zn | ppm | 2 | 10000 |
| 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.

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


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

[^0]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.

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www.alsglobal.com/geochemistry
ALS)

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\hline \text { CERTIFICATE KL19222053 } \\
\begin{array}{|l|l|}
\hline \text { Project: Bluff } \\
\text { This report is for } 21 \text { Rack samples submitted to our lab in Kamloops, BC, Canada on } \\
\text { 5-SEP-2019. } \\
\text { The following have access to data associated with this certificate: } \\
\text { ROGER MACDONALD } & \text { SUSAN ROLSTON } \\
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\end{array} \\
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$$ ***** See Appendix Page for comments regarding this certificate *****

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